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Meddelelser om Grønland

Denmark. Kommissionen for videnskabelige undersøgelser i Grønland

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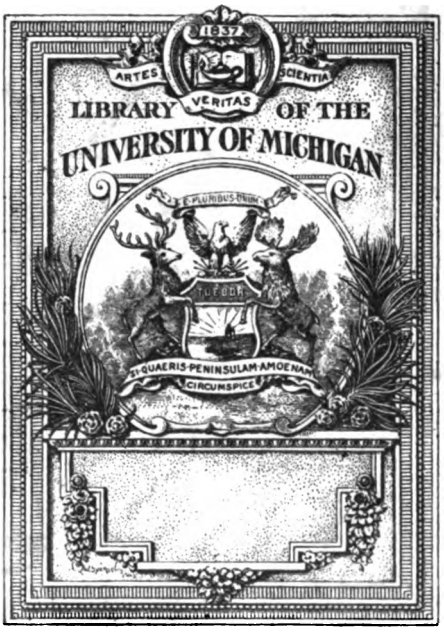

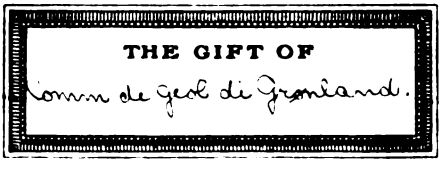

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Botanical exploration

of

the East Coast of Greenland between 65° 35′—
74° 30′ lat. N.

by

Chr. Kruuse.

1904.

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As a member of the Amdrup Coast Expedition of 1898—99, my instructions were to make natural-history investigations both during our voyage and while wintering at the trading-station of Angmagsalik. I received two sets of instructions for my guidance from the Commission for the Geological and Geographical investigation of Greenland.

One of these, written by Professor Eug. Warming, consists of four main parts, which are sub-divided into 29 paragraphs, giving very exhaustive directions as to the botanical works to be done during the voyage. The other briefly mentions the geological investigations which were to be made, time and circumstances permitting. As these instructions will undoubtedly be of great interest to others also, and as the former in particular may serve in future as a model, I give them here *in extenso*.

Instructions

given to **Chr. Kruuse** for the Expedition to East-Greenland in 1898—99 by Professor Eug. Warming.

A. Floristic investigations.

1. At every place visited by the Expedition as many species as possible should be collected. Botanists naturally also like to have as many specimens as possible, but the different species are the main object, the circumstances relating to their distribution being of the greatest importance for the history of the vegetation. From this point of view the interiors of the fjords, which the Expedition will visit, are of especial interest. Well-known and generally distributed species need not be collected when circumstances are unfavourable for the collecting, but their names must at any rate be noted.
2. Please observe the height above sea-level reached by the species, and the snow-limit.

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3. With regard to lichens, attention is directed to the fact that many species grow on the ground amongst moss, and on dry branches.
4. Gathering of Fungi. All dry, black-spotted portions of plants; all leaves lying loose on the ground; and the dung of reindeer, hares and other animals, may be expected to have fungi growing on or in them. All living plants the colour of which is not natural must be gathered.
5. Great attention should also be paid to the collecting of Mosses; not only specimens bearing fruit, but sterile specimens also are of interest. Examples of close turf builders are also wanted. They are no doubt most common in the interior of the fjords.
6. Freshwater as well as marine algæ are to be collected, and during the whole voyage, the bottom of the sea must be dredged for „Plankton", wherever possible. Red snow must not be forgotten; it may be put into glass vessels, and when it has melted, the water may be poured off and the sediment kept in spirit; a specimen of it may also be dried in the air, so that later on the algæ may perhaps be brought to life again. Algæ and other plants occurring in holes or otherwise on the inland-ice are of very great interest; please gather specimens and keep them, both in a dried condition on paper, and, more particularly, in spirit.

B. Investigations to be undertaken with regard to the Vegetation.

1. It is impossible to make too many notes regarding everything which helps to give a true picture of plant associations; their occurrence and appearance according to exposition, inclination of ground, etc.; also the sociability of the species; the density and height of the vegetation; the condition of the soil (please examine whether there are earthworms, and what other animals live in it). Particular attention should be paid to the following: Do willow copses, heaths, stone fields (Fjeldmark), debris etc. occur here (cfr. Warming: On the Vegetation of Greenland in Meddelelser om Grønland, Hefte 12), and how are they situated? Which are the dominant species? — Generally, they may be classified according to the following scale:

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(a) Species forming carpets, (b) occurring abundantly, (c) dispersedly, (d) sparsely, (e) rarely. — Are lichen and moss-heaths met with here otherwise than in small patches, and if so, where? Do these formations occur in sheltered places or in those exposed to the wind? How far up the hills do they extend? How far up does the vegetation extend as a whole? Which of the lichens are the dominant ones? (In Lapland several varieties of lichen-heaths are met with, formed in different localities according to the strength and desiccating power of the wind). Are the rocks coloured by lichens and algæ? Photographs of landscapes and vegetation are much wanted, also of single tufts of plants (e. g. large examples of Silene acaulis and the like) and of single plants (e. g. willow, bushes of dwarf birch).

2. The height of the bushes should be measured. Specimens of the thicker branches should be taken (only a few inches are necessary, but for the sake of the determination, preferably with branches bearing leaves attached, or at any rate tied on). It is desirable to get illustrations of the habit (not photographs but drawings of the forms of the bushes, espalier formations etc.). Are there any indications that the forms of the bushes are dependent on the height of the snow-sheet (the branches projecting beyond it being killed by desiccating wind).

   Can any information be had of the extent and duration of the snow-sheet in the interior of the country?

3. With regard to the marine alga-vegetation the following points should be noted:

   Which species form the main part of the vegetation at each place, both in the littoral region (beach) and in the sublittoral? It will be desirable to get photographs of the alga-vegetation at low water. Also photographs of single large Laminariaceæ. Information is required as to the duration of the Ice-foot at different places. Does *Ascophyllum nodosum* occur as commonly in the littoral region as the two *Fucus*-species (*F. vesiculosus* og *F. inflatus*)? Which of the Fucaceæ extends farthest into the fjords? Is *Laminaria cuneifolia* peculiar to disturbed waters (running water, exposed places, etc.)? Can this form, which typically is quite short-stalked, also occur in forms with longer stalks? Can *Agarum Tuneri*

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occur as a dominant social species in the upper part of the sublittoral region?

4. Please take particular note of the relation of the vegetation to the Inland-ice and Glaciers. Collect all information bearing on the possibility of the existence of plant-life in Greenland during the Glacial-Period. This includes not only observations regarding the marks of the height and extent of the ice-sheet in general, but also the occurrence of plants at the present time — in the vicinity of the ice and even upon the ice (ice covered with earth); and on the highest mountain tops —, and also the climatic conditions which predominate here.
5. Do peat formations occur? Which are the peat-forming plants in particular? The depth and quality of the peat should be examined, and the circumstances (soil or climate) which have caused the formation of peat.

C. Biological questions.

1. Is the vegetation snow-covered in winter? If vegetation occurs in places bare of snow, what appearance has it? Please collect specimens of portions which have survived the winter, either fresh green or otherwise, if possible in spirit or at any rate in a dried condition. What appearance has the snow-covered vegetation which has lately been laid bare or that which is still lying under the snow? Specimens should be collected in spirit, so as to ascertain amongst other things whether the plants contain stored-up nourishment, and whether there are any slight traces of flowers going to be developed in the following year.
2. As spring approaches, please note on the spot the first time each species is observed in flower. It will be of great interest, if it can be ascertained when spring generally and on an average comes in the regions visited by the Expedition. Spring phenomena in the animal kingdom should also be noted as far as possible.
3. In order to be able to examine the flowering and pollination phenomena it is desirable to have the flowers put in spirit while fresh. Observations regarding the visits of insects are desirable; if possible the visiting insects should be collected together with the flowers. Fresh flowers should be

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put in a small glass vessel containing spirit immediately after gathering, and as far as possible should be protected from shaking, etc. If possible attach a short pencil-note about development, etc.

4. Which plants bear ripe fruit? Please collect everything which bears testimony of fructification, e. g. also old empty fruits. Ripe seeds of all species are very much wanted.
5. Can a species break off its process of flowering and fructification at the beginning of winter and resume it next spring, without having suffered during the winter? (cfr. a Cochlearia at the winter station of the „Vega").
6. Please observe the duration of the sunshine; and register temperatures in the sun and at the height of the vegetation, preferably with thermometer balls of a colour approaching that of the green leaf or at any rate black, so that an idea may be formed of the degree of heat to which the vegetation is exposed.
7. Has earth been met with which is always frozen and to what depth? Does this obviously affect the vegetation, and in what way?
8. Note the degree of moisture in the air on the coast and up in the country; the temperature of the snow, the earth, and the water at different depths.
9. Please note all spring and autumn phenomena in the animal and vegetable world (the coming out of the leaves, and their fall; the tint of the autumn leaves; migratory birds, etc.), and make collections giving information about them.
10. Can birds and other animals carry seeds which have the power of germination, or in any other way bring about the migration of plants?

    Darwin, and others since his time (amongst them Warming and Kolderup Rosenvinge) have proved that seeds, which have lain in salt water for a long time, have kept their power of germination. On a long sea-voyage, e. g. from Greenland to Copenhagen, there are good opportunities for making such investigations, and if there is time and opportunity, it would be of very great interest to proceed with such investigations, as they would be able to throw light on the possibility of plantmigration over the sea.
11. If opportunities occur, the colours of the flowers should be noted according to the scale provided for the purpose.

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12. Specimens of the finest roots of heather — preferably with some earth attached — should be put in spirit (on account of the threads of fungi which occur around the roots).

The soil of the heaths as a whole requires to be thoroughly investigated, both with regard to the formation of heath-mould and to ascertain whether grey heath-sand and hardpan are formed in the same way as on the Jutland heaths.

13. Leaves of flowering plants should be put in spirit, preferably straight from the field, and should be accompanied by detailed information regarding the dampness of the locality, exposition, time of day when collected (at what o'clock), etc.

14. Little is known as to how far the light during the night is sufficient to produce carbonic acid-assimilation. This question should be investigated if opportunity offers. This would probably be most easily done by wrapping the leaves in tinfoil and keeping them from the light until the starch must have disappeared; they should then be uncovered by night, some of them — or portions of the same — should be put immediately in spirit (marked in some way or other), and others to be exposed to the light at night and put in spirit the next morning. The experiment should be made at a favourable temperature (the latter being noted).

15. The flowering plants should be gathered with the parts under the ground complete, and large enough to show how the species grow (whether they have a permanent primary root? whether runners? etc.).

16. How do the plants manage in the loose debris which is constantly sliding and which occurs upon and at the foot of so many basalt mountains? How are they formed? Do the roots go deep? Are they torn asunder? The vegetation is doubtless very open and poor in such places — to what degree, should be investigated.

D. Other investigations.

1. Drift-wood should be collected.
2. Attention is especially directed to the occurrence of the two different species of Dryas and their intermediate forms.

Copenhagen, July 4, 1898.

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IX

Copenhagen, April 15, 1898.

Notes regarding the geological observation to be made during the Expedition to the East Coast of Greenland in 1898.

The member of the Expedition who in particular will have to make geological observations, Mr. Chr. Kruuse, will undoubtedly make himself acquainted — at any rate in some measure — with the literature treating of the adjacent regions which have been already investigated, and from which he may consequently draw fairly correct conclusions as to what he may expect to find on the stretch of land he will have an opportunity of traversing. As he, being a botanist, will have enough to do with living nature, he cannot be asked or expected to bestow any considerable time on geological investigations. He will, however, be expected, as far as he has time and opportunity, to collect minerals as well as specimens of rocks and fossils, when these appear to him to be of special importance. By fossils are understood also sub-fossil shells of mollusks from the latest strata. He will note whether the shells of mollusks occur in the moraines, since such are found at several places on the west coast, and even at very considerable heights. They probably originate from unknown strata which have been eroded by the ice.

The geological observations which will presumably be more easily made in connection with the botanical investigations are: observations regarding the extent of the land-ice; how far up the ice-striated surfaces and transported blocks reach on the hills, also whether any peculiarly characteristic moraine and ridge-formations are to be met with. Farther, observations are required regarding any possible change in the height of the water; whether there are any raised strata with animal and plant-remains, or any indications that the water is rising. If the water since the period of the ice-covering has stood at a higher level than at the present time, the moraines and the scattered stones, which otherwise characterize the area whence the ice has retired, will be either washed away or water-worn and gathered on raised beaches, as pointed out by Mr. Pjetursson with regard to the Bay of Disko. The striations in such areas will also be more or less effaced. Does the land-ice carry characteristic species of stones such as lava and plant-remains (also diatoms) which could help to solve the question of the drift of the ice in the Arctic Ocean?

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It is desirable to take photographs and drawings of localities possessing geological interest.

Sign.

C. F. Wandel. K. J. V. Steenstrup. G. Holm.

It is very extensive investigations that are demanded in these instructions, and it was clear to me, even before starting, that much would have to be left undone, moreover, that much of the information wanted could not possibly be procured in the measure of time that was at the disposal of the expedition, and finally, that it would be more than a single man could do to fulfil the whole task properly under the particular circumstances.

In the course of the exploring journey I was still more convinced of this, and I soon had to admit that nothing but an utterly fragmentary work could be done, still less than I had imagined.

The difficulties of our geographical main task were much greater than expected, the objections we met with demanded such an amount of energy, strength, and time that only a minimum of these latter was left for science of nature, a minimum which was not even always allowed to work under circumstances of a merely passably favourable kind. As will appear from the following report, and as already stated by the chief of the expedition, only very small collections could be carried along, and these collections were made in accidentally chosen places, where the ice or our exhaustion forced us to make for the land, almost always on the outside sea cliffs or in direct vicinity of the sea, where circumstances were the very worst for animal and vegetable life. Only on single occasions circumstances were more favourable as to biology, and our results consequently better, but even then anything but a most superficial investigation was out of the question, as time was short — in the most favourable locality visited by me „Søndre Bræfjord" all my stay on shore lasted 105 minutes which time was mostly spent in noting the rather abundant flora of the place. On the other hand our only prolonged stay unfortunately had to be on a little sea cliff „Sten-Ø", where investigations to even a moderate extent were naturally rendered most difficult, as the part of the island in which we had settled was separated by several almost impassable clefts

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from the other part which was higher, and by far more favourable for scientific purpose. Ten days of forced stay on a waste sea cliff, in mostly bad weather, cannot possibly give anything but a scanty result.

As to the stay of the expedition in the district of Angmagsalik it took place only in wintertime; this was a good opportunity of studying the phenomena of wintering, but these studies must necessarily imply a knowledge of both the vegetation and the localities in summertime, a condition almost totally wanting. It is true that I saw the setting in of spring, but it had hardly begun when duty called me towards the north, and in all our journey out we did nothing but follow close on spring till at last we overtook winter itself.

In our northernmost place (July 19th) it was still perfectly wintry. Our journey back towards the south brought some fine midsummer days with a very good result, and during this period (July 30eth to Aug. 11th) I made my best work; but when we had arrived home to the district of Angmagsalik, in relatively safe conditions, the enormous tension produced by our struggle for life and science relaxed. We had fulfilled our geographical tasks, and our energy slackened, at the same time as our bodies reacted against the overexertion caused by our life during the last months, and several smaller complaints proved that the concentrated food, on which we had lived, was well apt to preserve phycical strength in times of very hard work, but that it did not agree with us under ordinary circumstances. In short, our work only dragged on, and when we arrived in our station, it was perfectly clear to me that it would be impossible to give any valuable description of the flora of the district of Angmagsalik.

Even before our journey back, I had contemplated a biological-floristical investigation of Angmagsalik which I should have preferred to carry out at once by staying the next winter there. This was however impossible, as I had no provision, no tools, no instruments, and last not least, no permission to stay in the country. During our journey home, I finished my scheme and applied with it to the directors of the Carlsberg Fund who kindly accepted my scheme and promised to leave the necessary means at my disposal. The investigation was however not at once carried out, as I had to partake in the following year (1900) of the expedition commanded by Lieut. Amdrup to the district of Scoresby-Sound. This expedition

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worked under easier and more favourable circumstances and ample collections were made; but though very interesting, the localities were rather uniform and not characteristically Greenlandic, and above all, they were for the greater part well known, as our head quarter Scoresby-Sound had already been explored three times, among others by the excellent observers Professor Nathorst and mag. Hartz. There was therefore not much to be discovered in these districts, so much the less as we followed in the tracks of Nathorst. Our best results were from Sabine-Ø and Jan Mayen, where much hitherto unknown was really observed.

Enlightened by experience I returned from this voyage and planned an investigation of Angmagsalik which was carried out by aid of the Carlsberg Fund in 1901—2. This time I set out alone, only accompanied by my wife, as experience had taught me that many members do not anyhow add to, but rather diminish the results of an expedition, as many contradictory interests must be made to work together, and as consequently the many only can obtain a little each, and nobody is or can be satisfied. The ideal will be, one man one task, but as the task easily becomes too much for one man, and as much purely mechanical work may as well be done by another, I should have preferred to be accompanied by one or two European assistants who might have taken some of the burdens of daily life off my shoulders. As it was I had however a good opportunity of thoroughly investigating the extensive and interesting district of Angmagsalik and of making ample collections.

It is the results of these three voyages to Greenland in 1898—99, 1900 and 1901—1902 [1]), that I am now bringing before the public. In order to give a general view and for some floristical purposes I have preferred to divide my work into two parts. The coast north of Cape Wandel which has not been much explored is treated by me together with the collections from the expedition of 1900, whereas the southern part is naturally connected with the district of Angmagsalik, and consequently they are treated together.

Besides my own collections, those made by N. Hartz and G. Amdrup, and many smaller contributions from the changing members of the expeditions are included. I have also revised the collections of Swedish expeditions in the museums of Upsala and

[1]) Meddelelser om Grønland 27. Hefte.

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Stockholm, in so far as they are connected with the above mentioned coasts. My best thanks are due to Professor Nathorst and Professor Wittrock in Stockholm for their kind assistance. I likewise would express my gratitude to the Danish authorities and persons who have helped me in revising my material.

It is my intention to give a further report of the expedition itself and the accompanying circumstances in the detailed description of my journey which will make a continuation of my „flora", and in which I also mean to give an account of the difficulties I had to overcome, especially before my last journey, and of the institutions and people who have lent me their weighty and valuable assistance, without which I should hardly have been able to fulfil the task I had taken upon myself.

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I.

The Marine Algæ of East Greenland

by

Helgi Jónsson.

1904.

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Meddelelser om Grønland.

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Meddelelser om Grønland,

udgivne af

Commissionen for Ledelsen af de geologiske og geographiske Undersøgelser i Grønland.

Tredivte Hefte.

Kjøbenhavn.
I Commission hos C. A. Reitzel.
Bianco Lunos Bogtrykkeri.
1911.

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Carlsbergfondets Expedition

til

Øst-Grønland,

udført i Aarene 1898—1900

under Ledelse af

G. Amdrup.

Fjerde Del.

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Introduction.

I have been charged with the determination of the latest collections of marine algæ from East Greenland. These collections have been procured by Mr. C. Kruuse, and the material dates from Amdrup's expedition in which Mr. Kruuse as well known took part, and from Kruuse's own expedition to the district of Angmagsalik. After the publication of L. K. Rosenvinge's exhaustive works on the Marine Algæ of Greenland (Grl. Havalg. and Deux. Mém.) several important papers have been written which have greatly altered the view regarding the limitation of species in some genera, such as *Acrosiphonia*, *Ulothrix* and *Sphacelaria*; therefore I have moreover been charged with a second examination of all the Greenlandic material of the genera *Acrosiphonia*, *Ulothrix* and *Sphacelaria*. In revising this material I have met with some new habitats of some intermingled species, as may be seen by the following list.

According to Rosenvinge's statement[1]) 83 species were previously known from East Greenland. To this number one species, *Actinococcus subcutaneus*, should be added, it is regarded by Rosenvinge (Deux. Mém.) as the nemathecia of *Phyllophora Brodiæi* and thus not included in the number of species. Of the 85[2]) species gathered by Kruuse 29 were not previously

[1]) L. Kolderup Rosenvinge, Om Algevegetationen ved Grönlands Kyster, Særtryk af »Meddelelser om Grönland« XX, Kjöbenhavn 1898, p. 180.

[2]) In Kruuse's collection there were moreover found two species, *Ectocarpus tomentosus* (Huds.) Lyngb. and *Ectocarpus fasciculatus* (Griff.) Harv.

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known from there; to the latter should be added 1 species (*Calothrix scopulorum*) found by N. Hartz in Heklahavn and not before mentioned. Thus we know for the present 114 species from East Greenland.

From West Greenland 156 species (to which number *Actinococcus subcutaneus* should be added) are enumerated by Rosenvinge, but on account of a different limitation of the species belonging to the three above mentioned genera (ɔ: *Acrosiphonia*, *Ulothrix* and *Sphacelaria*) 7 species must be added to this number, besides 1 species, *Microsyphar Polysiphoniæ* Kuck., not formerly mentioned from West Greenland. Thus the complete number of species from West Greenland is 165. All Greenland has 176 species.

Kruuse's collections have greatly amplified our knowledge of the marine algæ of East Greenland; the number of species has been considerably increased, and the distribution of the marine algæ along the coast is now far better known than before. 103 species of the 114 East Greenlandic species are also found on the western coast. The 11 species occurring only on the eastern coast are reported by Rosenvinge (l. c. p. 177), still it ought to be mentioned that *Alaria flagellaris* should be regarded as identical with *Alaria esculenta* f. *pinnata*. Thus the latest collections from the eastern coast furthermore confirm Rosenvinge's statement as to the difference between the marine flora of East and West Greenland (l. c. p. 176—178). As both *Alaria esculenta* f. *pinnata* and *Alaria grandifolia* are now known from East Greenland and moreover *Rhodochorton intermedium* Kjellm. from Spitsbergen is identic with *Rhodo-*

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which are not included in this number, and not at all mentioned in the following list, as Kruuse is not able to give any certain statement as to their habitats and does not remember whether they were growing loose or fastened to the bottom. Though it is scarcely probable that these species occur fastened to the bottom in East Greenland, I still mention them, for the purpose of calling the attention to them of future investigators of the eastern coast of Greenland.

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chorton Rothii, the resemblence between the marine flora of East Greenland and Spitsbergen (Rosenv. l. c. p. 154) is still greater.

In the following list all species of marine algæ presently known from East Greenland are enumerated, but only the new habitats are mentioned. The East Greenlandic species have numbers, in contradistinction to the species mentioned from West Greenland. The species are arranged in the same way as in Rosenvinge's books (Grl. Havalg. and Deux. Mém.) some few excepted; the localities are disposed from north downwards on the western coast and from south upwards on the eastern coast.

A list of the marine algæ gathered by Krause at Jan Mayen will be published in Botanisk Tidsskrift.

List of the mentioned localities:

West Greenland:	N. Lat.
Upernivik	71° 47′
Umanak	70° 40′
Atanikerdluk	70° 2′
Sarkak	70° 00′
Unartok	69° 55′
Ujaragsugsak	69° 50′
Klokkerhuk	69° 30′
Godhavn	69° 14′
Christianshaab	68° 49′
Inilik in Atanek Fjord	68° 00′
Agto	67° 57′
Tatsip-ata	67° 20′
Holstensborg	66° 56′
Sukkertoppen	65° 25′
Ny Hernhut	64° 11′
Godthaab	64° 11′
Merkuitsok	63° 45′
Igdlunguak south of Merkuitsok	63° 38′
Fiskernæsset	63° 5′
An island off the glacier of Frederikshaab	62° 30′
Frederikshaab	62° 00′
Nigamiut pr. Frederikshaab	62° 00′

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West Greenland:	N. Lat.
Kvannefjord	62° 00′
Neriak	61° 35′
Smallesund	61° 32′
Issa west of Arsuk Fjord	61° 16′
Ivigtut	61° 13′
Arsuk	61° 10′
Arsuk Storö	61° 5′
Kornok Isbræer	61° 5′
Igdlorsuit	61° 4′
Sermilik Fjord	61° 4′
Ataneritsok (Igaliko)	61° 00′
Narsak	60° 55′
Kakortok	60° 49′
Kagsimiut	60° 48′
Upernivik Ö near Kagsimiut	
Julianehaab	60° 43′
Umanalik east of Kangek Ö	60° 36′
The rock Nunanguak west of Umanak	60° 34′
Sardlok	60° 32′
A rock near Kaersok	60° 29′
Umanarsuk	60° 28′
Umanartut	60° 26′
Sydpröven	60° 26′
The northern side of Sermersok	60° 23′
Tasermiut prope Korsoak	60° 18′
The south end of Amitsok opposite Sermersok	60° 7′
Nanortalik	60° 7′
The south side of Tusardluarnak	60° 7′
Kimatulivigsalik, Kitsigsut Öer	about 60° 2′
East Greenland:	
Ikerasarsuk	60° 2′
Nunatsuk	60° 4′
Kap Dan	65° 31′
The estuary of Kalerajuek near Kap Dan	65° 34′
Tasiusak	65° 37′
Kakasuak	65° 38′
Ikerasak	65° 49′
Unartok	65° 50′

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East Greenland:	N. Lat.
Kangarsik	65° 50′
Ikerasausak	about 65° 52′
Tiningnekelak	65° 54′
Ikatek	65° 55′
Angmagsivik	65° 58′
Smalsund	65° 59′
Moræneö	66° 1′
Stenö	66° 2′
Ödesund	66° 11′
Kangerdlugsuatsiak	66° 15′
Bræfjord	66° 20′
Nualik	67° 16′
Kap Dalton	69° 25′
Turner Ö	about 69° 40′
Turner Sund	about 69° 45′
Dunholm	69° 55′
Heklahavn	70° 27′
Polhems Dal in Kong Oscars Fjord	about 72° 30′
Kap Borlase Warren	74° 15′
Sabine Ö	74° 30′

Abbreviations:

Gr. occ. = Groenlandia occidentalis.
Gr. or. = Groenlandia orientalis.
N. H. = N. Hartz.
L. K. R. = L. Kolderup Rosenvinge.

Copenhagen, Botanical Museum, July 1904.

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A. Rhodophyceæ.

I. Florideæ.

Fam. *Corallinaceæ.*

Lithothamnion Phil.

1. **L. glaciale** Kjellm., K. Rosenv. Deux. Mém. p. 9.

2. **L. flabellatum** K. Rosenv. Deux. Mém. p. 10.

3. **L. varians** Fosl., K. Rosenv. Deux. Mém. p. 11.

4. **L. foecundum** Kjellm., K. Rosenv. Deux. Mém. p. 12.

5. **L. investiens** Fosl., K. Rosenv. Deux. Mém. p. 13.

6. **L. circumscriptum** Strömf., K. Rosenv. Deux. Mém. p. 13.

7. **L. læve** (Strömf.) Fosl. [1]), K. Rosenv. Deux. Mém, p. 14.

This is the only species of calcareous algæ in the collection. It was collected with conceptacles in July. Further information as to its occurrence is wanting.

Gr. or.: Stenö.

Hildenbrandia Nardo.

8. **H. rosea** Kütz., Rosenv. Gr. Havalg. p. 826.

On stones in the littoral region; collected in June and July with sporangia.

Gr. or.: Stenö, Kap Dalton.

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[1]) This species has kindly been determined by M. Foslie.

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Fam. *Squamariaceæ.*

Peyssonellia Dcsne.

9. **P. Rosenvingii** Schmitz, K. Rosenv. Deux. Mém. p. 14.

Cruoria Fries.

10. **C. arctica** Schmitz, K. Rosenv. Deux. Mém. p. 15.

Petrocelis J. Ag.

11. **P. polygyna** (Kjellm.) Schmitz, Rosenv. Deux. Mém. p. 16.

The species was found on stones, together with *Lithoderma fatiscens* and *Lithothamnion*. The greater part of the stones were fastened to the haptera of species of *Laminaria*. *Petrocelis polygyna* was abundant on the stones, and often the Lithoderma crust was overgrown by it. The main part of the material from Kap Borlase Warren and Sabine Ö was sterile, and only in a few cases I have met with carpogonia.

Specimens gathered in July at Stenö were rich in starch, the uppermost cells excepted, as mentioned by Rosenvinge (l. c.) and were supplied with gonimoblasts.

Gr. or.: Stenö, Kap Borlase Warren on exposed shore, in a depth of 5 fathoms, Sabine Ö in a depth of 5—10 fathoms.

Rhododermis Crouan.

12. **Rh. elegans** Crouan, K. Rosenv. Deux. Mém. p. 18.

Fam. *Dumontiaceæ.*

Dilsea Stackh.

13. **D. integra** (Kjellm.) K. Rosenv. Deux. Mém. p. 19.

The specimens I have had for examination are up to 15 cm. long and 4 cm. broad. Most of the specimens have almost perfectly even margins. The species was collected in July, in an exposed place, in a depth of 3—8 fathoms.

Gr. or.: Sabine Ö.

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Fam. *Ceramiaceæ.*

Antithamnion Näg.

14. **A. Plumula** (Ellis) Thur. *β.* **boreale** Gobi, K. Rosenv. Grl. Havalg. p. 787, Deux. Mém. p. 21.

This variety has been gathered in many places on the eastern coast of Greenland. It mostly grows on other algæ, such as *Polysiphonia arctica*, *Euthora cristata*, *Ptilota pectinata*, etc. Its normal length seems to be 2 cm., but a few specimens attain a greater length, up to 3 cm. Glandular cells were frequent. The main part of the material gathered in June and July is sterile, and only a few plants collected in the latter part of June had normally developed tetraspores. It was collected in a depth of 3—5 and up to 30 fathoms.

Gr. or.: Kap Dan, Tasiusak (3—30 fathoms), Kakasuak, Angmagsivik, Stenö, Ödesund, Nualik, Kap Dalton, Turner Sund (sheltered shore, rapid current, 3—5 fathoms), Sabine Ö (exposed shore, 3—8 fathoms).

Ptilota C. Ag.

15. **P. pectinata** (Gunn.) Kjellm., K. Rosenv. Gr. Havalg. p. 790, Deux. Mém. p. 22.

This species seems to occur just as frequently on the eastern as on the western coast of Greenland. The material collected in January and May—September was sterile. The largest specimens were 20 cm. long. Found in a depth of 3—19 (—30) fathoms.

Gr. or.: Kap Dan, Tasiusak, Kakasuak, Kangarsik, Smalsund, Ödesund, Sabine Ö (exposed shore, 3—8 fathoms).

Rhodochorton Näg.

16. **R. Rothii** (Turt.) Näg., K. Rosenv. Grl. Havalg. p. 791, Deux. Mém. p. 23.

The specimens I have had for examination were collected in May, June and July, and are almost all sterile; only a few abnormally developed, but conspicuously quartered tetrasporangia were found in a sample gathered in July. The specimens attain

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a length of up to 1,5 cm., and the breadth varies from 14—17 μ. Some specimens growing on *Chætomorpha Melagonium* differed in this, that some of the erect filaments sometimes were growing spirally round the *Chætomorpha* filament.

The longest specimens were found growing in the littoral region in a crack on Stenö.

Gr. or.: Tasiusak, Kangarsik, Stenö, Nualik.

17. **R. penicilliforme** (Kjellm.) K. Rosenv. Algues mar. d. Grl. p. 66. Deux. Mém. p. 23. R. mesocarpum (Carm.) v. penicilliforme Kjellm., K. Rosenv. Grl. Havalg. p. 792.

This species grows on Bryozoa as well as on different algæ. On the Bryozoa it always occurs together with *R. membranaceum.* Some specimens found on *Chætomorpha Melagonium* are specially remarkable on account of their elegantly developed basal discs and their luxuriant growth altogether. The erect filaments were vigorously developed with undivided and divided sporangia; 2—3 unilateral branches were not rarely met with. The thickness of the filament varied from 11—16 μ.

Gathered in May, June, August and September. Tetraspores were observed in a gathering from August.

Gr. or.: Tasiusak, Ikerasak, Kangerdlugsuatsiak.

18. **R. membranaceum** Magnus, K. Rosenv. Grl. Havalg. p. 794. Deux. Mém. p. 23.

Some sterile specimens were collected in June and September, growing on Bryozoa together with *R. penicilliforme.*

Gr. or.: Tasiusak, Ikerasak.

Fam. *Rhodomelaceæ.*

Rhodomela C. Ag.

19. **R. lycopodioides** (L.) Ag., K. Rosenv. Grl. Havalg. p. 796. Deux. Mém. p. 24.

a. **typica** Kjellm.

The specimens I have had for examination belong to f. *com-*

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pacta Kjellm. and f. *laxa* Kjellm. Their length varies from 2—12 cm. Young shoots were abundant in July and September.

β. **tenuissima** (Rupr.) Kjellm.

The specimens attain a length of 7 cm., are abundant in hair leaves; the youngest branches often corymbous. Gathered in June in the littoral region and in a depth of more than 2 fathoms.

α. typica.

Gr. or.: Tasiusak (Amaga), Stenö, Nualik.

β. tenuissima.

Gr. or.: Moræneö.

Polysiphonia Grev.

20. **P. arctica** J. Ag., K. Rosenv. Grl. Havalg. p. 800, Deux. Mém. p. 25.

The species was gathered sterile in May—September. The length varies from 7—20 cm. The pericentral cells are generally 5—7, and but rarely 4, as mentioned by Rosenvinge. The specimens from Kap Borlase Warren were supplied with monosiphone haptera irregularly placed in the lower part of the frond. These haptera were most often discoidally widened at the end; they are perfectly like those mentioned by Rosenvinge in Deux. Mém. l. c. In May—August the species was richly supplied with new shoots. The older parts of the frond are generally much overgrown with Diatoms. It was gathered in a depth of 3—20 (—30) fathoms both on open and sheltered shores.

Gr. or.: Tasiusak, Ikerasak, Smalsund, Stenö, Ödesund, Kangerdlugsuatsiak, Nualik, Turner Sund, Kap Borlase Warren, Sabine Ö.

Fam. *Delesseriaceæ.*

Delesseria Lam.

21. **D. Baerii** (Post. et Rupr.) Rupr., emend., K. Rosenv. Grl. Havalg. p. 806. Deux. Mém. p. 26.

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α. **typica** K. Rosenv. l. c.

The main part of the specimens belongs to the typical form. They were gathered in a depth of 1—3 fathoms, and their length varies from 5—15 cm. The material was collected as well on open as on sheltered shores in June—July and consists of mere sterile plants. The species seems to be common.

β. **corymbosa** (J. Ag.) K. Rosenv. l. c.

This variety has only been found in one place, on sheltered shore, in rapid current. Sterile specimens 6 cm. high.

The main form was found in the following places:

Gr. or.: Kap Dan, Tasiusak, Kakasuak, Kangarsik, Angmagsivik, Turner Ö, Turner Sund, Sabine Ö.

β. corymbosa:

Gr. or.: Turner Sund.

22. **D. sinuosa** (Good. et Wood.) Lam., K. Rosenv. Grl. Havalg. p. 808, Deux. Mém. p. 27.

The main part of the specimens belongs to f. *lingulata*, and only a few plants may be referred to f. *typica* or f. *quercifolia*. The largest plants are 30 cm. long. The species was gathered in May—August in a depth of up to 30 fathoms. Specimens with tetraspores were found in July.

It is worth noticing how common f. *lingulata* is in this collection from the eastern coast; formerly it was only known from a single place in Greenland, Sabine Ö (Rosenv. l. c.), and is not mentioned at all from the western coast. This form which usually occurs in sheltered places, was collected in East Greenland in exposed places, near Kap Borlase Warren (11 fathoms), off Turner Ö (15—20 fathoms) and near Sabine Ö (3—8 fathoms). In Turner Sund it was gathered on sheltered shore, in rapid current and in a depth of 3—5 fathoms. Possibly such places may be called sheltered on account of the considerable depths, and I also suppose that the presence of the ice for the greater part of the year reduces the effects of the exposed position.

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Gr. or.: Kap Dan, Tasiusak, Nualik, Turner Ö, Turner Sund, Kap Borlase Warren, Sabine Ö.

Fam. *Rhodymeniaceæ.*

Rhodymenia (Grev.).

23. **R. palmata** (L.) Grev., K. Rosenv. Grl. Havalg. p. 809, Deux. Mém. p. 28.

The main part of the specimens belongs to the typical form. The breadth of the frond varies considerably. Multipartite specimens with narrow lobes somewhat reminding of f. *sarniensis* were found in Tasiusak. Many of the specimens have small prolifications especially in the older parts of the frond. A few fragments from Smalsund seem most probably to belong to f. *prolifera*. The length of the frond varies from 5 to 46 cm. The species was gathered in May—August, and with tetraspores in May—July; in a depth of 3—30 fathoms.

Gr. or.. Tasiusak, Ikerasak, Tiningnekelak, Smalsund, Kangerdlugsuatsiak.

Halosaccion Kütz.

24. **H. ramentaceum** (L.) J. Ag., K. Rosenv. Grl. Havalg. p. 825, Deux. Mém. p. 43.

The specimens I have had for examination belong to f. *robusta* and f. *ramosa*; their length varies from 10—30 cm. In specimens gathered in May young shoots were abundant. The species was collected in a depth of up to 19 fathoms in May—September. Specimens with tetraspores date from June, July and September. The species seems to be common.

Gr. or.: Tasiusak, Ikerasak, Tiningnekelak, Angmagsivik, Smalsund, Ödesund, Kangerdlugsuatsiak, Nualik.

Fam. *Rhodophyllidaceæ.*

Rhodophyllis Kütz.

25. **R. dichotoma** (Lepech.) Gobi, K. Rosenv. Grl. Havalg. p. 812, Deux. Mém. p. 28.

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The specimens all have been found in Tasiusak. They were gathered in a depth of up to 30 fathoms and are 10—15 cm. long. The frond of the main part of the specimens is narrow and belongs to f. *fusca* Lyngb., but mingled with this are broader plants belonging to the typical form. The species was gathered with tetraspores in May, with cystocarps in May—June.

Gr. or.: Tasiusak.

Euthora J. Ag.

26. **E. cristata** (L.) J. Ag., K. Rosenv. Grl. Havalg. p. 813, Deux. Mém. p. 28.

The main part of the specimens belongs to f. *angustata* Lyngb., and only a smaller number of plants may be referred to the typical form. The length of the plants varies from 2—17 cm. (f. *typica* 2—5 cm., f. *angustata* 4—17 cm.). These two forms imperceptibly merge into each other; in somewhat exposed places the broader form is found, and the long, narrow one in more sheltered places. The specimens from Turner Sund which were found in a sheltered place in rapid current are intermediate forms between the broad and the narrow ones. Specimens from Tasiusak and Kap Dan attaining a length of 15—17 cm., a length unusual in this species, do not in other respects differ from the ordinary f. *angustata*. Owing to a statement from Kruuse they were gathered in sheltered places.

The species was collected in May—August, in a depth of 3—20 (—30) fathoms. Specimens with tetraspores were gathered in June, and cystocarps were found in May—August.

Gr. or.: Kap Dan, Tasiusak, Stenö, Ödesund, Turner Sund, Turner Ö.

Turnerella Schmitz.

27. **T. Pennyi** (Harv.) Schmitz emend., K. Rosenv. Deux. Mém. p. 29. T. Pennyi, T. septentrionalis K. Rosenv. Grl. Havalg. p. 815 and 817.

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The specimens are mostly large, up to 17 cm. long and 12 cm. broad; but mingled with them are however smaller specimens, 2 cm. long, 1,5 cm. broad. Many of the larger specimens have discs and a stalk of up to 2 mm's length; the larger plants supplied with discs were 10—11 cm. long and 10—15 cm. broad. The specimens were gathered in May, July and September, in a depth of 3—20 fathoms. Specimens with cystocarps growing wartlike in the frond were gathered in May. The cystocarps did not seem to be quite ripe.

Gr. or.: Tasiusak, Stenö, Turner Ö, Sabine Ö.

Fam. *Gigartinaceæ.*

Phyllophora Grev.

28. **P. Brodiæi** (Turn.) J. Ag. ***interrupta** (Grev.) K. Rosenv. Grl. Havalg. p. 821, Deux. Mém. p. 32.

All the specimens belong to subsp. *interrupta* which seems to be common; they are up to 16 cm. long and were gathered in a depth of up to 19 fathoms both in exposed places and in Turner Sund in a sheltered place, in rapid current. The species was gathered sterile in May—July and September—October. Young shoots were abundant in May and September.

Gr. or.: Kap Dan, Tasiusak, Tiningnekelak, Ödesund, Turner Sund, Sabine Ö.

Actinococcus Kütz.

29. **A. subcutaneus** (Lyngb.) K. Rosenv. Grl. Havalg. p. 822.

In adhesion to Darbishire's previous view regarding this species[1]), Rosenvinge mentions it in Deux. Mém. (p. 32—34) as the nemathecia of *Phyllophora Brodiæi* * *interrupta*, but in consequence of Darbishire's last treatise on *A. subcutaneus*[2])

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[1]) O. Darbishire: Die Phyllophora-Arten der westlichen Ostsee deutschen Anthells, Kiel 1895.

[2]) O. Darbishire: On Actinococcus and Phyllophora. Annals of Botany Vol. 13, 1899.

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it must be regarded as a distinct species growing parasitically in the antheridia of *Phyllophora Brodiæi*.

The specimens were gathered in May and July.

Gr. or.: Tasiusak, Ödesund, Sabine Ö.

Ceratocolax K. Rosenv.

30. **C. Hartzii** K. Rosenv. Deux. Mém. p. 34.

Fam. *Gelidiaceæ*.

Harveyella Schmitz et Rke.

31. **H. mirabilis** (Reinsch) Schmitz et Rke., K. Rosenv. Deux. Mém. p. 39.

Fam. *Helminthocladiaceæ*.

Chantransia Fr.

32. **C. efflorescens** (J. Ag.) Kjellm., K. Rosenv. Deux. Mém. p. 40.

33. **C. microscopica** (Näg.) Fosl., K. Rosenv. Grl. Havalg. p. 825, Deux. Mém. p. 40.

The specimens I have referred to this species ramify abundantly from their very base, which in this species consists of only one cell, as well known. The branches are mostly opposite, but scattered branches are not uncommon. The thickness varies from 6—7 μ. The cells are generally longer than broad, up to more than two times as long as broad.

Epiphytically on *Rhodomela lycopodioides* gathered in September with a few sporangia and long hairs.

Gr. or.: Tasiusak (Amaga).

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II. Bangioideæ.

Fam. *Bangiaceæ.*

Porphyra Ag.

34. **P. miniata** Ag., emend. K. Rosenv. Grl. Havalg. p. 826, Deux. Mém. p. 44.

α. **typica** K. Rosenv. Grl. Havalg. l. c.

Only a few specimens have been gathered, all belonging to this variety. It was gathered fructiferous in June. The antheridia contained 16 pollinoids.

In his work about *Porphyra* Hus[1]) attaches much systematic importance to the number of pollinoids. I have therefore tried to apply this character on some specimens from Greenland, Iceland, the Færöes and Norway, belonging to *P. miniata* v. *typica*, v. *amplissima* and v. *tenuissima*, and I have found a number of pollinoids somewhat differing from Hus's statements, as will appear from what follows:

P. miniata v. *typica*. This variety is not described in Hus's work[2]). One specimen from Greenland had 16 pollinoids in each antheridium. Another specimen likewise from Greenland generally had 32 pollinoids in each antheridium, but mingled with antheridia containing 32 pollinoids others were found containing only 16 pollinoids, and the latter seemed to be at the same stage of development as the former. A Færoese specimen mostly had 16 pollinoids in each antheridium but sometimes only 8. Another Færoese specimen had 32 pollinoids in each antheridium in the lower part of the frond but 16 and 8 in the upper part which seemed to be imperfectly divided.

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[1]) Henry T. A. Hus: An Account of the Species of Porphyra found on the Pacific Coast of North America. Proceedings of the California Academy of Sciences, third Series, Botany, Vol. II, No. 6. San Francisco 1902.

[2]) In *P. miniata* v. *cuneiformis* Setchell et Hus the number of pollinoids is stated to be 8.

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P. amplissima (Kjellm.) is stated by Hus to have 16 pollinoids in each antheridium. A specimen from Norway (Norv. arct. Mehavn leg. Fosl.) had 16 as a rule, more rarely 32 pollinoids in each antheridium. Sometimes there were only 8 cells, but these were evidently imperfectly divided. A specimen from Iceland likewise mostly had 16 and more rarely 32 pollinoids in each antheridium. In connection with this I shall point out that Kjellman (Arct. alg. Pl. 18, Fig. 8) shows more than 16 pollinoids in two of the antheridia.

P. tenuissima Strömf. is described by Hus as containing 8 pollinoids in each antheridium. A specimen from Iceland, Strömfelt's original specimen, belonging to the Herbarium of the Botanical Museum, had mostly 16 and sometimes 32 pollinoids in each antheridium. A few times I saw only 8, but they seemed to be imperfectly divided.

Thus the number of pollinoids cannot be used as a specifically distinctive character for the above mentioned species, at least not as far as the Arctic and North Atlantic specimens are concerned.

In Grl. Havalg. Rosenvinge mentions that the inferior portion of the thallus of the distromatic forms of *Porphyra* always is composed of a single layer of cells («Observandum praeterea est, imam partem frondis in distromaticis etiam formis semper monostromaticam esse («cfr. Kjellman l. c.» [ɔ: Arct. alg.] «tab. 18, fig. 2») (Rosenv. l. c. p. 829). Hus calls this in question (l. c. p. 185), as he «cannot confirm Rosenvinge's statement, that in the distromatic forms the inferior portion of the tallus is composed of a single layer of cells». In order to investigate this matter more thoroughly I have examined specimens belonging to *P. miniata* v. *typica* and v. *amplissima* both from Iceland, the Færöes and Norway, besides those from East Greenland. In all the specimens examined, the inferior part of the thallus proved to be monostromatic up to a distance of about 0,5 cm. from the base. Thus Rosenvinge's observation is perfectly

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right. If Hus is right in stating that the inferior portion of the thallus of the American species is distromatic, there is a strange difference between the American Pacific specimens and the Arctic and North Atlantic plants.

Gr. or.: Ikerasak.

Conchocelis Batt.

35. **C. rosea** Batt., K. Rosenv. Deux. Mém. p. 44.

B. Phæophyceæ.

Fam. *Fucaceæ.*

Ascophyllum Stackh.

36. **A. nodosum** (L.) Le Jol., K. Rosenv. Grl. Havalg. p. 832, Deux. Mém. p. 45.

The specimens I have had for examination were gathered with ripe or almost ripe conceptacles in June, July and September. According to C. Kruuse's statement the species is common in sheltered places, whereas it is wanting completely in exposed localities.

Gr. or.: Kap Dan, Ikerasausak, Unartok, Tiningnekelak, Angmagsivik.

Fucus (L.) Dcne et Thur.

37. **F. vesiculosus** L., K. Rosenv. Grl. Havalg. p. 833, Deux. Mém. p. 45.

The most common form from East Greenland is f. *sphærocarpa* which is closely connected with the other forms, f. *typica* and f. *turgida*, by numerous intermediate forms as in West Greenland. Specimens without bladders are not unfrequent in the material, especially in the collections from the estuary in Angmagsalik.

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The species was gathered in May—September. Specimens gathered in May—Juli had young receptacles, whèreas the plants from August—September had fully developed receptacles.

Gr. or.: Kap Dan, Tasiusak, Unartok, Ikerasausak, Tiningnekelak, Ikatek.

38. **F. inflatus** L., K. Rosenv. Grl. Havalg. p. 834, Deux. Mém. p. 45.

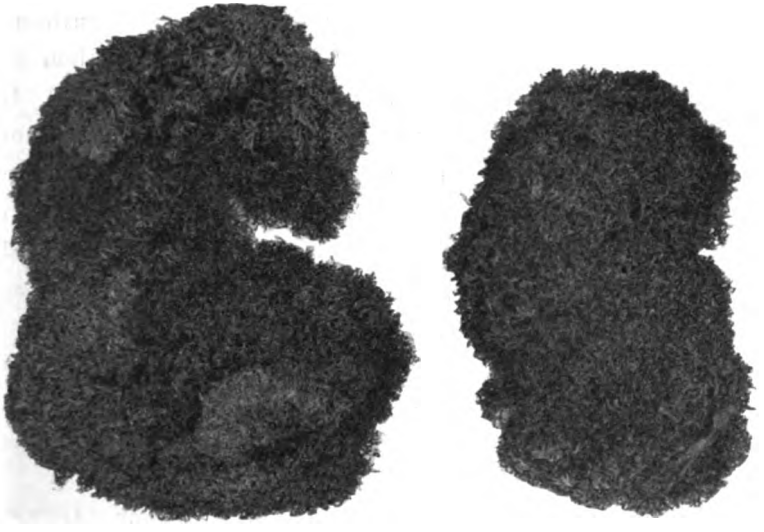

Fig. 1. *Fucus inflatus* L. f. *membranacea* K. Rosenv.
The specimens from Kap Dalton (comp. the text) photographed in dry state.

This very multiform species is varying much, as might be expected, in East Greenland as in its other areas of distribution. Typical specimens (comp. Jónsson Icel. Alg. p. 187) are however rare in this collection, yet at Tasiusak and Angmagsivik broad typical specimens have been collected, richly supplied with bladders. Not one of the specimens I have had for examination has receptacles by far as long as those of the Icelandic (Jónsson l. c.) and the Færöese specimens (comp. Börgesen Fær. Alg. p. 465, fig. 91). As for the rest the East Greenlandic specimens are considerably varying and form on one hand the

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transition to f. *nana* Kjellm. and f. *bursigera* J. Ag. and on the other hand to f. *linearis* (Huds.) and f. *membranacea* K. Rosenv. The shorter specimens (1—4 cm.) with relatively thick frond agree with f. *bursigera* (J. Ag.) Kjellm. which is again by intermediate forms closely connected with f. *nana* Kjellm. Forma *linearis* (Huds.) is scarce in this collection. Forma *membranacea* K. Rosenv. is relatively amply represented. This thinner form of *F. inflatus* ought in my opinion rather to be reckoned a form than a variety, as it has surely been produced by environmental influences (Rosenv. Deux. Mém. l. c.). At Kap Dalton an interesting form belonging to f. *membranacea* was gathered. It consists of low plants with narrow and thin frond; they are not fastened to the bottom but densely entangled, a sort of Ægagropila form. Two samples belonging to this form have been gathered, the greater one is 11 cm. long and 10 cm. broad (Fig. 1). According to reports from C. Kruuse this form was found forming »dense but loose» (ɔ: not fastened to the bottom) »and unbroken strata covering the bottom, in shallow water, in a depth of 2—10 fathoms, in two lagoons near Kap Dalton, where the sea was calm, the covering of ice of long duration, the water salt, the bottom of basaltic gravel».

The species was gathered with receptacles in June—August.

f. *typica*.

Gr. or.: Kap Dan, The estuary of Kalerajuek near Kap Dan, Tasiusak, Tiningnekelak, Angmagsivik, Moræneö, Kangerdlugsuatsiak.

f. *bursigera* (J. Ag.).

Gr. or. Ikerasak, Bræfjord, Nualik.

f. *membranacea* K. Rosenv.

Gr. or.: Kap Dalton, Turner Sund, Polhems Dal.

Fam. *Tilopteridaceæ*.

Scaphospora Kjellm.

39. **S. arctica** Kjellm., K. Rosenv. Deux. Mém. p. 48.

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Fam. *Laminariaceæ.*

Alaria Grev.

40. **A. Pylaii** (Bory) J. Ag., emend. K. Rosenv. Grl. Havalg. p. 838, Deux. Mém. p. 48.

α. **typica** K. Rosenv. Grl. Havalg. l. c.

Some small specimens perfectly typical with few and broad sporophylls were gathered in September.

β. **membranacea** (J. Ag.) K. Rosenv. Grl. Havalg. l. c.

This variety is more richly represented in the collection than the former one. It is rather variable, and as mentioned by Rosenvinge, plants agreeing in one respect with one and in another respect with another variety are not uncommon; therefore any plain distinction between these varieties cannot easily be made. On the other hand var. *membranacea* is moreover so closely connected with *Alaria grandifolia* J. Ag. that according to our present knowledge of these forms they cannot be said to differ in anything, but their size.

Var. *membranacea* was gathered with sporangia in July.

γ. **grandifolia** (J. Ag.), Alaria grandifolia J. Ag. Grl. Lam. p. 26.

To this variety I have referred two specimens from East Greenland. They remind of var. *typica* as to the breadth of the lamina and the cordate base; on the other hand as to the length of the stipe, the form of the lamina, the form and the size of the sporophylls, they resemble so much var. *membranacea*, that no natural distinction can be made. As these particular specimens fully agree with J. Agardh's description of *A. grandifolia* (l. c.) I have referred them to this species, and as it seems to me that a specific character is only artificially established between this species and *A. Pylaii*, as enlarged by Rosenvinge, I at least provisionally regard *A. grandifolia* as a variety of *A. Pylaii*.

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The Greenlandic specimens which were salted down together with species of *Laminaria* were of the following sizes, measured in centimeters:

	A.		B.	
	Soaked	Dried	Soaked	Dried
Total length	380	323	...	200
The lamina: length	260	230	...	140
The lamina: greatest breadth	60	50	70	55
Stipe	120	93	...	60
Stipe below rhachis		55	...	23
Sporophylls: length	70	54 +	...	77
Sporophylls: greatest breadth	15	...	...	10

These measures of length[1]) both of the lamina, the stipe, and the sporophylls agree well with the measures stated by J. Agardh (l. c.). On the contrary the breadth of the lamina of the Greenlandic specimens is somewhat larger than stated by J. Agardh. J. Agardh gives the breadth of the lamina as one foot and a half (= about 47 cm.), and according to Kjellman (Spetsb. II) the breadth of the lamina is 30 cm. The greatest breadth of the Greenlandic plants is 70 cm. of soaked and 55 of dried material. As no information is given, as to whether the measures of Kjellman and J. Agardh refer to living, soaked, or dried plants, and as furthermore it is most probable that the measured plants were dried, I reckon the difference of breadth between the Greenlandic specimens and the plants from Spitzbergen perfectly unessential. The Green-

[1]) These measures of plants in wet and dry states prove that their total length is reduced 15 % by the drying process, the length of the lamina 11,5 %, the breadth of the lamina in one case (A.) 16,6 %, in another case (B.) 21 %, and the length of the stipes 22,5 %. A single measuring like this does not allow any general conclusion as to the normal reduction by drying of the frond of the several species of Alaria, but as generally the descriptions do not state whether the measures refer to living, soaked, or dried material, it nevertheless shows, that it is not justifiable to let too small a difference of size (breadth or length) have worth as a character of species, variety, or even of form.

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landic plants must rather be regarded as thick plants. The midrib is broad, 1—1,2 cm. in the inferior portion of the lamina measured in dry state, and its transverse section is narrowly elliptical as in other varieties of this species. The sporophylls are distant below, less distant upwards as stated by J. Agardh. In the superior sterile portion they reach their greatest breadth (10 cm. dried, 15 cm. soaked) which by far exceeds the measure stated by J. Agardh («sesquipollicem»); but as the breadth of the sporophylls is considerably variable in *A. grandifolia* (comp. Kjellm. Spetsb. II, p. 11), I do not think that any essential importance may be attached to this difference.

According to Rosenvinge (Grl. Havalg. l. c.) and according to what I have seen myself, the position of the sporophylls is not of any systematic importance; the same may be said of the consistence of the lamina, as it is dependant of age (Kjellm. Spetsb. l. c., Rosenv. Grl. Havalg. l. c.) and locality (Rosenv. l. c.). Nor to the length of the stipe may any systematic importance be attached, as it increases with the age of the plant. Thus the above mentioned Greenlandic plants might possibly be regarded as an old *A. Pylaii* v. *typica*; but on account of our present knowledge of v. *typica*, it is not justifiable to determine them as belonging to this variety. I have therefore chosen to identify them with *A. grandifolia*, as they agree with this species better than any of all the described species of *Alaria*.

Gathered with sporangia in June. The specimens were growing in a luxuriant vegetation of *Laminaria*, in a depth of 3—5 fathoms, in rapid current, on a steep rock-side, sheltered by a sea cliff, where no drift ice normally would appear.

α. typica.

Gr. or.: Smalsund.

β. membranacea.

Gr. or.: Tasiusak, Tiningnekelak, Nualik, Kap Borlase Warren.

γ. grandifolia.

Gr. or.: Ikerasak.

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41. **A. esculenta** (L.) Grev. var. **pinnata** (Gunn.) Kjellm. Handbok p. 29, A. flagellaris K. Rosenv. Deux. Mém. p. 49.

In the collection I have had for examination two somewhat badly conserved specimens are found which differ from *A. Pylaii* by the equilateral transverse section of the costa. Their sizes measured in centimeters are as follows:

Total length	The lamina		Stipe	Stipe below rachis	Sporophylls	
	Length	Breadth			Length	Breadth
112	100	20	12	3	27	5,2
132	119	36	13	5	30	5

The base of the lamina is broadly cuneate. The transverse section of the costa is angular, but not rectangular, the two longer sides are always straight and parallel. The sporophylls are dense and not placed in a furrow. The stipe is terete and short, especially the part below the rachis is exceedingly short. In the inferior portion of the rachis scars of fallen sporophylls are visible. In one specimen the rachis is considerably thicker than the inferior portion of the stipe. For the present I refer these specimens with some doubt to *A. esculenta* v. *pinnata*, as a form with short stipe. Any final determination of to which species these plants belong must be put off till some better material will be at our disposal.

Gr. or.: Tasiusak.

Geogr. distribution: Spitsbergen, Iceland, The Færöes, Norway.

Agarum (Bory) Post. et Rupr.

42. **A. Turneri** Post. et Rupr., K. Rosenv. Grl. Havalg. p. 841, Deux. Mém. p. 50.

All the specimens I have had for examination are small; the stipe of the largest one is 15 cm. long, the lamina 50 cm. The species was gathered in May and June in a depth of 3—9 fathoms. According to a report from Kruuse it was found —

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but only small specimens, 3 feet long — at Ikerasak mingled with a luxuriant vegetation of *Laminaria*, in a very rapid current, sheltered by a sea cliff, where no drift ice would normally appear. According to C. Kruuse's statement the species is common.

Gr. or.: Kap Dan, Tasiusak, Ikerasak.

Laminaria Lam.

43. **L. digitata** (L.) Lam., K. Rosenv. Deux. Mém. p. 51.

44. **L. nigripes** J. Ag., emend. K. Rosenv. Grl. Havalg. p. 842. *β* **atrofulva** (J. Ag.) K. Rosenv. l. c.

Of this variety a few smaller specimens have been gathered with the lamina undivided or divided in two parts, besides one large specimen with much longer stipe than stated by Rosenvinge. The stipe is terete; only at the upper end, where it merges into the lamina, it is a little broader and somewhat compressed, 40 cm. long. The lamina is 115 cm. long, divided in two lobes, almost equally broad — the greatest breadth 43 cm.; only the inferior portion of the lamina, 13 cm. long, is undivided. The plant is changing the lamina, and the remainder of the old lamina is 60 cm. long. A circle of dense, radially elongated, muciparous canals fully agreeing with Rosenvinge's description is found in the stipe, most often very near the surface, so as to be frequently covered of but a single layer of cells. The large specimen belongs to f. *cucullata*, it grew in Ikerasak, on a steep rocky wall, sheltered by a sea cliff, and mingled with a luxuriant vegetation of Laminaria, in a very rapid current, where no drift ice would normally appear. In a depth of 3—5 fathoms. Gathered in June, changing the lamina.

Gr. or.: Ikerasak, Nualik.

45. **L. longicruris** De la Pyl., K. Rosenv. Grl. Havalg. p. 845, Deux. Mém. p. 52.

This species is formerly known from a single place, Ang-

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magsalik (K. Rosenv. Deux. Mém. l. c.) on the eastern coast of Greenland. In Kruuse's collection only a small, young specimen was found which I have referred to this species, although with some doubt. The stipe was almost solid, but the middle layer in several places consisted of a very loose tissue, and small cavities were already formed here and there; thus the stipe is evidently growing hollow. Muciparous canals abundant in the stipe, in a peripherical circle. Sterile, gathered in June, in a depth of 3—30 fathoms. Kruuse's specimen also was gathered in Angmagsalik.

As to the occurrence of this species in East Greenland, north of Angmagsalik C. Kruuse has given me the following information: «*Laminaria longicruris* has not been gathered nor seen by me anywhere (north of Angmagsalik) in East Greenland. In spite of numerous examinations I never found a *Laminaria* with hollow or inflated stipe, neither have I seen any such drifting or driven ashore, though otherwise it is not unfrequently seen drifting about the territory of its distribution».

Gr. or.: Tasiusak.

46. **L. groenlandica** K. Rosenv. Grl. Havalg. p. 847, Deux. Mém. p. 53.

The species is abundantly represented in the collection, and all the specimens are typical, fully agreeing with the description (K. Rosenv. Grl. Havalg. l. c.). The following measures show the size of the specimens, in centimeters.

		soaked	dried							
Stipe		.....	53	40	19	35	15	16	6	23	6
Lam.	length	150	150	100	100	90	65	60	40	70	45
	greatest breadth	80	70[1])	62	42	35	17	14	15	35	9
Sorus	length	.....	40	80	40	Without Sorus					
	greatest breadth	.....	5	20	5						

[1]) In this case the breadth of the lamina was reduced 12,5 % by the drying process.

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The species was gathered in May—August and October, with sorus in June and July, in a depth of 3—19 fathoms. At Ikerasak it grew in a luxuriant vegetation of *Laminaria*, on a steep rockside, in very rapid current, sheltered by a sea cliff, where no drift ice would normally appear. According to a statement from C. Kruuse the species is common in sheltered places in East Greenland.

Gr. or.: Tasiusak, Ikerasak, Tiningnekelak, Kangerdlugsuatsiak.

47. **L. saccharina** (L.) Lam. *δ.* **grandis** Kjellm. Handbok p. 25.

The size of the dried specimens that we have for examination is in centimeters as follows:

Stipe	80	123	80	80	80	130	67	66	96
Length of the young lamina	59	90	60	40	70	50	71	68	74
» » the old lamina	..	...	..	..	60	...	40	46	..
Greatest breadth of the young lamina	37	30	45	30	40	30	30	32	22
Sorus { length	..	...	..	..	37	...	..	30	..
Sorus { greatest breadth	..	...	..	..	4	...	..	7	..

The lamina of most of the specimens is broadest below the middle, oblong-ovate; but sometimes the greatest breadth of the lamina is in the middle, and its shape is narrowly elliptical, or the lamina is almost equally broad and linear-lanceolate. The base of the lamina is generally broadly cuneate, sometimes narrowly cuneate or rounded, and in some cases it shows a disposition to the cordate form. The sorus occupies the middle of the lamina in its whole length except the basal part, it is narrow, almost equally broad, or its greatest breadth is in the inferior part, or sometimes in the middle, and then its form is elliptical. The lamina is thin, and its transverse section agrees with Kjellman's description; the middle portion is destitute

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of rugæ and a little thicker than the undulate marginal part. The stipe is relatively thin and 60—130 cm. long.

The narrower specimens with lanceolate lamina remind partly of *L. saccharina* var. *glacialis* Kr. Rosenv. (Deux. Mém. p. 53), partly of the main form of *δ. grandis* Kjellm., while the broader plants with ovate lamina of all described forms of *Laminaria saccharina* mostly resemble *δ. grandis* f. *latifolia* Kjellm. (Handb. p. 26, *Laminaria saccharina* f. *latissima* Kjellm. Arct. Alg. p. 230), and only seem to differ from the latter in this, that the lamina does not attain so large a breadth, and consequently also in this, that the base does not appear so markedly cordate.

The specimens were gathered changing the lamina and with sorus in July, in a depth of 3—8 fathoms, both in sheltered localities, in rapid current, and on open shore.

Gr. or.: Turner Sund, Kap Borlase Warren, Sabine Ö.

48. **L. solidungula** J. Ag., K. Rosenv. Grl. Havalg. p. 850, Deux. Mém. p. 57.

The species is considerably varying in size and in the form of the lamina. The shorter specimens are 6,5 cm. long and sterile; they are evidently very young plants, 1—2 years old. The larger specimens are 250 cm. long, evidently perennial plants. Many of the specimens have a lamina divided in four parts (one in 5), dating from different years. In the oldest, and often in two of the oldest portions an opening is found of the same shape as the sorus, and in its place in the lamina; in the one year old portion of the lamina, and often also in the oldest portion but one, the place where the sorus was found is clearly marked from the other portion by its whitish colour and its greater transparency. The sorus is generally ovate, or oblong-ovate, or oval-elliptical in the basal part of the lamina as described by J. Agardh (Spetsb. Alg. p. 3) and Kjellman (Spetsb. II, p. 16); but in two cases I have met with a different form of

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sorus. In oue case the sorus occupied the middle of the upper part of the young lamina, and only the lower third of the lamina was sterile; the sorus was however not continuous in its whole length; it was about 50 cm. long, its greater breadth 5 cm.; its smaller breadth 2 cm. In the other case the one year old lamina, 70 cm. long, had a linear sorus 65 cm. long and 6 cm. broad; it was almost equally broad in its whole length, only narrowing off a little upwards. A similar form of sorus seems to be mentioned by Kjellman (Spetsb. II, p. 17) and by Rosenvinge (Deux. Mém. l. c.). The form of the lamina[1]) varies as mentioned by Kjellman (Spetsb. II, p. 16) from the almost circular to the lanceolate form. In young specimens we frequently meet with a lingulate apex in the young lamina, some-

Fig. 2. *Laminaria solidungula* J. Ag. Two dried specimens photographed by E. Warming, showing the lamina divided in four parts, dating from different years. In the three years old portion an opening indicates the place of sorus.

[1]) By lamina is meant here the portion of the lamina developed in a single year.

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times not at all separated from the latter by a constriction. J. Agardh calls this lingulate apex ligula, and he considers it a part of the young lamina. It is scarcely correct to explain «the ligula» in this way, as no ligula at all is found in very young specimens in their first year. I am of the opinion that the ligula always is the remainder of an older lamina, and the constriction occurs with age, as the breadth of the lamina increases.

Judging by what I have seen in young specimens from Greenland it seems justifiable to suppose that the plant does not produce any sorus for the first 2 (or 3) years of its life.

The length of its stipe naturally varies according to the age of the plant; the longest stipe was 80 cm. long. In order to show the size of some of the specimens of which the lamina dates from the fourth year (in a single case the lamina dates from the second year), the following measures are given in centimeters:

Total length	Stipe	The length and the breadth of the laminæ							
		a		b		c		d	
		length	breadth	length	breadth	length	breadth	length	breadth
219	50	44	23	46	30	49	30	30	..
209	34	60	29	50	25	40	24	25	15
245	60	46	20	62	25	47	20	30	15
190	80	60	23	50	21	..	..	..	..

In this table **a** indicates the young lamina; **b** is one year, **c** two, and **d** three years old.

The specimens were collected in a depth of 3—10 fathoms both on open shore and in sheltered locality in rapid current. Smaller specimens were found at Ikerasak in a rich vegetation of Laminaria sheltered by a sea cliff, where no drift ice would normally appear. The species was collected in June and July, with sorus in the young lamina in June. In many of the

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specimens the young lamina has not yet reached its normal size. The specimens with old laminæ were found at Turner Sund and Kap Borlase Warren. The species is commonly distributed, according to Kruuse's statement.

Gr. or.: Tasiusak, Ikerasak, Turner Sund, Kap Borlase Warren, Sabine Ö.

Saccorhiza De la Pyl.

49. **S. dermatodea** (De la Pyl.) J. Ag., K. Rosenv. Grl. Havalg. p. 850, Deux. Mém. p. 57.

The specimens were gathered sterile in May—July; there are both large and small specimens; especially those gathered in Tiningnekelak in the current place (up to two fathoms of water, no drift ice) are of considerable size. The largest specimens measured in centimeters, in dried condition, give the following measures:

Total length	Stipe	The lamina	
		length	breadth
320	40	280	15
115 +	25	90 +	26

Gr. or.: Kap Dan, Tasiusak, Tiningnekelak.

Fam. *Chordaceæ.*

Chorda (Stackh.).

50. **Ch. Filum** (L.) Stackh., K. Rosenv. Grl. Havalg. p. 853, Deux. Mém. p. 57.

Several fragments of this species, the largest one 80 cm. long, were gathered sterile in Septemher.

Gr. or.: Tasiusak (Kilitilik).

Fam. *Chordariaceæ.*

Chordaria (Ag.).

51. **Ch. flagelliformis** (O. F. Müll.) Ag., K. Rosenv. Grl. Havalg. p. 854, Deux. Mém. p. 58.

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Gathered with sporangia in September. The largest specimen 17 cm. long.

Gr. or.: Tasiusak, Ödesund.

Fam. *Desmarestiaceæ.*

Desmarestia Lam.

52. **D. aculeata** (L.) Lam., K. Rosenv. Grl. Havalg. p. 857, Deux. Mém. p. 59.

The species was gathered in May—July. The specimens gathered in May are richly supplied with hairs. On the contrary only a few plants of a gathering from June had a small number of hairs.

It was found in a depth of 3—20 (—30) fathoms, both in exposed and sheltered places.

Gr. or.: Kap Dan, the estuary of the Kalerajuek near Kap Dan, Tasiusak, Tiningnekelak, Turner Ö, Sabine Ö.

var. **media** (Ag.) J. Ag., K. Rosenv. Grl. Havalg. l. c.

Of this variety a few specimens were gathered in July; hairs abundant; they perfectly agree both with the specimens mentioned by Rosenvinge (l. c.) and with the Færöes specimens (Börgesen, Fær. Alg. p. 445). Gathered on open shore, in a depth of 11 fathoms.

Gr. or.: Kap Borlase Warren.

53. **D. viridis** (O. F. Müll.) Lam., K. Rosenv. Grl. Havalg. p. 859, Deux. Mém. p. 60.

The length of the specimens varies from 3—40 cm., they were all gathered in July, and in some of them hairs are abundant. The species was found both in exposed and sheltered places, in a depth of 3—11 fathoms.

Gr. or.: Turner Sund, Kap Borlase Warren, Sabine Ö.

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Fam. *Dictyosiphonaceæ.*

Dictyosiphon Grev.

54. **D. foeniculaceus** (Huds.) Grev., K. Rosenv. Grl. Havalg. p. 859, Deux. Mém. p. 60.

The specimens are up to 50 cm. long; they were collected in July and August; with sporangia in August. In the upper sublittoral region.

Gr. or.: Tiningnekelak, Kangerdlugsuatsiak.

Coilodesme Strömf.

55. **C. bulligera** Strömf., K. Rosenv. Grl. Havalg. p. 862, Deux. Mém. p. 61.

Fam. *Punctariaceæ.*

Phyllitis Kütz.

56. **Ph. fascia** (O. F. Müll.) Kütz., K. Rosenv. Grl. Havalg. p. 862.

The species was gathered in a single place. The specimens are 15 cm. long and 2—3 cm. broad; one specimen even reaches a breadth of 7 cm. The margin is often slightly undulate.

Gathered sterile in May, in a depth of 5—19 fathoms.

Gr. or.: Tasiusak.

Delamarea Har.

57. **D. attenuata** (Kjellm.) K. Rosenv. Grl. Havalg. p. 865, Deux. Mém. p. 63.

Scytosiphon (Ag.).

58. **S. lomentarius** (Lyngb.) J. Ag., K. Rosenv. Grl. Havalg. p. 863, Deux. Mém. p. 62.

var. **typica** K. Rosenv. Grl. Havalg. l. c.

Some typical specimens 10 cm. long and 0,5—1 mm. broad were gathered with young sporangia in June. Some of the fructiferous plants were destitute of paraphyses (comp. K. Rosenv. Deux. Mém. l. c.).

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var. **complanata** K. Rosenv. Grl. Havalg. l. c.

Some typical specimens up to 40 cm. long and 2—4 mm. broad were gathered with sporangia in June and July.

Gr. or.: Ikerasak, Tiningnekelak.

Symphyocarpus K. Rosenv.

59. **S. strangulans** K. Rosenv. Deux. Mém. p. 67.

Stictyosiphon Kütz.

60. **S. tortilis** (Rupr.) Reinke, K. Rosenv. Grl. Havalg. p. 868. Deux. Mém. p. 70.

The specimens I have had for examination are up to 17 cm. long; they were gathered in June—August; with unilocular sporangia in July—August. Specimens from August are richly supplied with hairs.

Gr. or.: Kap Dan, Tiningnekelak, Ödesund, Kangerdlugsuatsiak, Turner Sund, Kap Borlase Warren.

Isthmoplea Kjellm.

61. **I. sphæropbora** (Harv.) Kjellm., K. Rosenv. Grl. Havalg. p. 881, Deux. Mém. p. 75.

Some sterile, loose specimens growing together with *Stictyosiphon tortilis* and *Pylaiella littoralis* were gathered by N. Hartz in a hole in the ice on the lagoon, north of Kap Dalton.

Gr. or.: Kap Dalton.

Punctaria Grev.

62. **P. plantaginea** (Roth) Grev., K. Rosenv. Deux. Mém. p. 71.

Omphalophyllum K. Rosenv.

63. **O. ulvaceum** K. Rosenv. Grl. Havalg. p. 872, Deux. Mém. p. 73.

A small fragment of this species was found among the haptera of *Polysiphonia arctica*.

Gr. or.: Kap Borlase Warren.

Geogr. distribution: Jan Mayen, Iceland, Miquelon near New Foundland.

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Fam. *Elachistaceæ.*

Elachista Dub.

64. **E. fucicola** (Vell.) Aresch., emend. K. Rosenv. Grl. Havalg. p. 78, Deux. Mém. p. 74.

a. **typica.**

Gathered with unilocular sporangia in June and September.

Gr. or.: Smalsund.

β. **lubrica** (Rupr.) K. Rosenv.

Gathered with unilocular sporangia in May and June. In one specimen gathered in May plurilocular sporangia were found both in the lower part of the long assimilative shoots (comp. Rosenv. l. c.) and in the upper part of the short assimilative shoots. It has been gathered in a depth of up to 19 fathoms and grows on *Halosaccion ramentaceum*, *Saccorhiza dermatodea* and on the stipes of species of *Laminaria*.

Gr. or.: Tasiusak, Ikerasak.

Leptonema Rke.

65. **L. fasciculatum** Rke., Elachista fasciculata K. Rosenv. Deux. Mém. p. 75.

var. **subcylindrica** K. Rosenv. Grl. Havalg. p. 879.

Was found together with *Pylaiella* on a stipe of *Laminaria*, sterile filaments 7—12 μ thick, fructiferous filaments 11—15 μ. In almost all the filaments plurilocular sporangia were abundant; these sporangia are often more prominent than usual in this variety. Gathered in May.

Gr. or.: Tasiusak.

Fam. *Ectocarpaceæ.*

Ectocarpus Lyngb.

Subgen. Pylaiella (Bory).

66. **E. littoralis** (L.) Lyngb., K. Rosenv. Grl. Havalg. p. 881. Deux. Mém. p. 75.

var. **opposita** Kjellm.

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This variety is the most frequent in the collection and according to a statement from Kruuse it is common in East Greenland. The largest specimens are 30 cm. long. It was gathered in May—September; in June, July and September with unilocular, in June and July with plurilocular sporangia; in a depth of 1—3 (—30) fathoms.

Gr. or.: Kap Dan, Tasiusak, Ikerasak, Kangarsik, Tiningnekelak, Angmagsivik, Smalsund, Kangerdlugsuatsiak, Nualik.

var. **divaricata** Kjellm. forma.

Grows on *Fucus inflatus*. The filaments are densely entangled, so as to produce a habitual resemblance with *Ectocarpus tomentosus*. The thickest main branches were 19—23 μ thick. The branches are frequently incurved and not rarely slightly hooked at the apex which often ends in a hairlike point. I have seen a single plurilocular sporangium terminal on a long branch, 196 μ long, 22 μ thick at the base and 17 μ at the top. Gathered in the littoral region in August.

It seems to me that this form is very much like f. *prætorta* Kjellm. (Handbok p. 85) which is only known from the Baltic; but whether they are identical I am not able to decide.

Gr. or.: Polhems Dal in Kong Oskars Fjord.

var. **varia** (Kjellm.) Kuck. f. **typica** Kuck., Pylaiella varia Kjellm.

Typical specimens have been gathered, some loose, and some others attached to stipes of Laminaria, in a depth of up to 5 fathoms. Gathered in June and July with unilocular sporangia.

Gr. or.: Ikerasak, Tiningnekelak.

Subgen. Euectocarpus Hauck.

67. **E. siliculosus** (Dillw.) Lyngb., K. Rosenv. Grl. Havalg. p. 882.

Some specimens of this species were gathered in September; they attain a thickness of 55 μ and have only plurilocular sporangia which are 188 μ long and 43 μ broad.

Gr. or.: Tasiusak.

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68. **E. confervoides** (Roth) Le Jol., K. Rosenv. Grl. Havalg. p. 883, Deux. Mém. p. 76.

Gathered in June with plurilocular sporangia. The specimens reach a thickness of 33 μ. Was found together with *Acrosiphonia* and *Pylaiella*.

Gr. or.: Angmagsivik.

69. **E. pycnocarpus** K. Rosenv. Grl. Havalg. p. 886.

The plants I with some doubt refer to this species are up to 10 cm. long; in dried condition their colour is brownish green; they have a distinct main axis, and towards the apex the branches are somewhat bunched. The end of the younger branches is often hairlike. Young unilocular sporangia are found; they are mostly destitute of stalks, often unilateral, but also often scattered. The cells are much shorter than they are broad, and in this respect the plants are perfectly like *E. pycnocarpus*. Though the characteristic position of the sporangia of *E. pycnocarpus* (K. Rosenv. l. c. fig. 23 B, C) is not found in these plants, I still refer them to this species, as by examinating the original specimen I have met with branches with young unilocular sporangia of the same appearance and position as the above mentioned plants.

As my material is in dried condition like all the material of *E. pycnocarpus*, no definite statement can be given as to the form and number of the chromatophores.

Gathered in June with young unilocular sporangia.

Gr. or.: Ikerasak.

70. **E. ovatus** Kjellm. v. **tenuis** K. Rosenv. Deux. Mém. p. 77.

The specimens collected at Kap Borlase Warren perfectly agree with Rosenvinge's description; it only ought to be mentioned that specimens without branches or only furnished with a few branches, and with plurilocular sporangia mostly not opposite but unilateral, are frequent in the collection. Such specimens are identical with *E. Holmii* (K. Rosenv. Grl. Havalg.

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p. 889) and might be called f. *Holmii*, as mentioned by Rosenvinge (Deux. Mém. l. c.), as they are connected with the typical var. *tenuis* by intermediate forms.

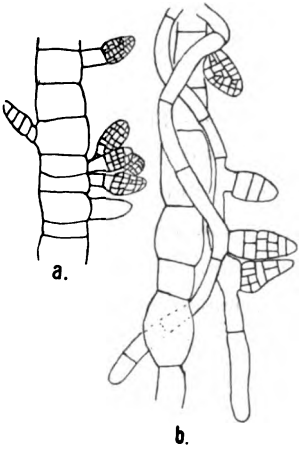

Fig. 3. *Ectocarpus ovatus* Kjellm. a a fragment of a filament with irregularly placed plurilocular sporangia showing to the right a group of sporangia. 168 : 1. b a fragment of a filament with rhizoids showing the plurilocular sporangia of the rhizoids (compare the text). 276 : 1.

The specimens gathered in Angmagsalik (in May?) were 43 μ thick in the lower part of the frond and thus remind of the typical form of *E. ovatus*. The plurilocular sporangia were frequently opposite, but scattered or terminal sporangia also occurred. Sometimes the plurilocular sporangia were found several together in a small group (compare Fig. 3 a). The rhizoids which were abundant at the base of the plants were frequently furnished with plurilocular sporangia in large number as shown in my figure (Fig. 3 b).

Gathered in (May? and) July with plurilocular sporangia.

Gr. or.: Angmagsalik, Kap Borlase Warren.

Subgen. Streblonema (Derb. et Sol.).

71. **E. æcidioides** K. Rosenv. Deux. Mém. p. 80.

72. **E. belophorus** K. Rosenv. Deux. Mém. p. 82, Fig. 17.

In the frond of *Petrocelis polygyna* I have met with sterile filaments of a brown alga, perfectly agreeing with the description and figures of this species. But my material did not give any further information as to this interesting alga.

Gathered sterile in July.

Gr. or.: Stenö.

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Microsyphar Kuck.

M. Polysiphoniæ Kuck. Beiträge p. 29.

Was found in the outer walls of *Polysiphonia urceolata* which was mingled with *Sphacelaria radicans*, growing on the under side of beetling rocks.

Gr. occ.: Ivigtut (L. K. R.).

Geogr. distribution: Iceland, The Færöes, Scotland, Helgoland.

Fam. *Myrionemaceæ.*

Myrionema.

73. **M. globosum** (Rke.) Fosl. Phycocelis globosus K. Rosenv. Deux. Mém. p. 86.

Ralfsia Berk.

74. **R. deusta** (Ag.) J. Ag., K. Rosenv. Grl. Havalg. p. 899, Deux. Mém. p. 93.

75. **R. clavata** (Carm.) Farl., K. Rosenv. Deux. Mém. p. 94.

Sorapion Kuck.

76. **S. Kjellmani** (Wille) K. Rosenv. Deux. Mém. p. 95; Lithoderma Kjellmani Wille, K. Rosenv. Grl. Havalg. p. 902.

On *Chætomorpha Melagonium*. Gathered sterile in July.

Gr. or.: Tiningnekelak.

Lithoderma Aresch.

77. **L. fatiscens** (Aresch.) emend. Kuck., K. Rosenv. Deux. Mém. p. 97, Grl. Havalg. p. 901.

Abundant on stones having been fastened to the haptera of species of *Laminaria*. The specimens fully agree with K. Rosenvinge's description and figure (Deux. Mém. l. c. fig. 22). The filaments are 10—14 μ thick. Gathered in July; with young unilocular sporangia in July, in a depth of 3—8 fathoms.

Gr. or.: Kap Dalton, Turner Sund, Kap Borlase Warren, Sabine Ö.

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Fam. *Sphacelariaceæ.*

Chætopteris Kütz.

78. **Ch. plumosa** (Lyngb.) Kütz., K. Rosenv. Grl. Havalg. p. 903, Deux. Mém. p. 99.

According to a statement from Kruuse this species is common in East Greenland; it grows gregariously, and from some of its habitats it has been gathered in great numbers. It was collected in a depth of up to 20 fathoms; the largest plants are 10 cm. long. All the specimens gathered in May—September are sterile, but the stalks of the sporangia from earlier years seem to be persistent, as they cover the older branches with a dense felt, as mentioned by Rosenvinge (l. c.).

Gr. or.: Kap Dan, Tasiusak, Ikerasak, Stenö, Ödesund, Kangerdlugsuatsiak, Nualik, Kap Borlase Warren, Sabine Ö.

Sphacelaria Lyngb.

79. **S. racemosa** Grev. var. **arctica** (Harv.) Rke., K. Rosenv. Grl. Havalg. p. 904, Deux. Mém. p. 100.

The species is surely common in East Greenland. It was gathered in the littoral region and in the sublittoral region in May—September, in a depth of up to 5 fathoms (in a single case a depth of 3—30 fathoms was stated). The specimens are up to 3 cm. long, and they are almost all sterile, only in a few specimens gathered in June, emptied unilocular sporangia were found; they were mostly terminal on monosiphone branches, but sometimes they were found several together on polysiphone branches, which is in perfect agreement with Rosenvinge's description in Deux. Mém. (l. c.).

Gr. or.: Kap Dan, Tasiusak, Smalsund, Moræneö, Stenö, Kap Dalton, Turner Sund.

S. radicans Harv., Sauvag. Sphacelaria p. 56; S. olivacea K. Rosenv. Grl. Havalg. p. 904 ex parte.

Only sterile specimens, destitute of hairs, growing on the

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under side of beetling rocks and on the shell of a crab in a depth of 4—5 fathoms.

Gathered in June and July.

Gr. occ.: Christianshaab (N. H.), Ivigtut (L. K. R.).

Geogr. distribution: Iceland, Scotland, Ireland, Britain, Kattegat, Helgoland, Normandy, Bretagne.

80. **S. britannica** Sauvag. Sphacelaria p. 66; S. olivacea K. Rosenv. Grl. Havalg. p. 904 ex parte.

The Greenlandic specimens are perfectly typical and fully agreeing with Sauvageau's description (l. c.). Both the specimens from West Greenland and those from East Greenland were gathered in July, and are sterile. The plants from West Greenland grew in the littoral region in rock-clefts; the specimens from East Greenland were found on stones together with *Lithoderma*.

Sauvageau (l. c. p. 69) who founds his opinion on the informations given by Rosenvinge (l. c.) as well as on the examination of Giesecke's specimens in Thuret's herbarium, declares *S. olivacea* from Greenland to be identical with *S. britannica*. It has however been proved by an examination of the Greenlandic material that the specimens referred by Rosenvinge to *S. olivacea* really do belong to two species: *S. radicans* Harv. and *S. britannica* Sauv.

The specimens of Lyngbye's herbarium mentioned by Rosenvinge (l. c.) were gathered in Greenland by Giesecke but are without any statement as to their habitats; they mostly belong to *S. britannica*, but filaments of *S. radicans* are however frequently found mingled with *S. britannica*.

Gr. occ.: Sukkertoppen (L. K. R.).

Gr. or.: Kap Dalton.

Geogr. distribution: Iceland, The Færöes, Scotland.

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C. Chlorophyceæ.

Fam. *Phyllosiphonaceæ.*

Ostreobium Born. et Flah.

81. **O. Quekettl** Born. et Flah., K. Rosenv. Deux. Mém. p. 101.

Fam. *Gomontiaceæ.*

Gomontia Born. et Flah.

82. **G. polyrrhiza** (Lagerh.) Born. et Flah., K. Rosenv. Deux. Mém. p. 101.

Fam. *Cladophoraceæ.*

Acrosiphonia (J. Ag.).

The genus *Acrosiphonia* is here defined as proposed by Wille [1]) and includes only species with many nuclei in each cell. Thus defined the genus is identical with the subgenus *Melanarthrum* (Kjellman, Acrosiphonia p. 50). It has already been pointed out (Börgesen, Fær. Alg. p. 506, Jónsson Icel. Alg. p. 367), that Kjellman's division of the subgen. *Melanarthrum* into sections is untenable, at all events it may be regarded as fully demonstrated that the section I, *Speirogonicæ*, and section II, *Zoniogonicæ*, are to be considered as one. In the Greenlandic species of this genus the sporangia certainly mostly occur singly or two or three together, but 5—7 sporangia in a continuous row are not rare. Thus the Greenlandic material seems further to show that the above named sections are to be considered as one. Species with spinous branches did not occur in the Greenlandic collections.

The Greenlandic species are easily distinguishable by the following key:

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[1]) Botaniska Notiser 1899, p. 281.

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A. Without terminal sporangia.
   a. with incurved branches ..... *A. incurva.*
   b. without incurved branches ..... *A. hystrix.*
B. With terminal sporangia ..... *A. penicilliformis.*

83. **A. incurva** Kjellm., Acrosiphonia p. 61, Cladophora (Spongomorpha) arcta *α.* typica and *β.* pulvinata K. Rosenv. Grl. Havalg. p. 907.

The Greenlandic specimens are 2—6 cm. high and 130—170 *μ* thick. The sporangia occur singly, two or three together, or up to 7 in a row. Incurved branches occur, but rather rarely. The lower part of the main axis of young plants terminates in an axile rhizoid, which dies off, as the plants grow older and the number of lateral rhizoids increases; in many cases it is replaced by a new axile rhizoid of intra-matrical origin, but usually the old specimens show the lower end of the main axis dying off. The lower end of the rhizoids is generally considerably enlarged, and often irregularly branched; sometimes these branches are well developed stolons, emitting erect filaments. The rhizoids are as a rule densely entangled below, as the branches or lobes of the basal cells work into each other. The apex of rhizoids not touching the substratum is not enlarged but incurved or hooked, and may be considered as a kind of prehensile organ.

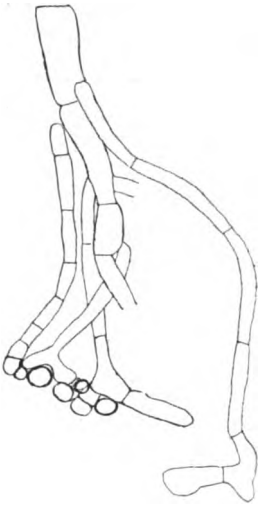

Fig. 4. *Acrosiphonia incurva* Kjellm.
A basal portion of a plant showing the lower end of the main axis dying off and lateral rhizoids with their widened and branched basal cells. To the left a stolon emitting an erect filament is to be seen. 25 : 1.

Injured rhizoids, the lower part of which is dying off or has been thrown away, are in many cases renewed by an

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iterated division of the lowest living cell, and the new part of the rhizoid is distinctly marked from the old one by a sheath formed by the remaining walls of a dead cell. In the same way the uppermost branches, when injured, are renewed by an iterated division of the uppermost living cell, and the lower end of the young branch is enclosed in a sheath of a dead cell. Sometimes more than one sheath is to be seen in the young branch showing that the branch has been repeatedly renewed. The young branches produced in this manner are usually considerably narrower than the older part of the branch and often highly resemble flagelliform branches; consequently the occurrence of flagelliform branches is of a doubtful value as a specifically distinctive character. Such renewed growth of the branches is certainly sometimes produced in the manner, that the uppermost part of a branch above some emptied sporangia is thrown off, and the cell next to the emptied sporangia forms a new apex by iterated division, but in most cases it is produced in the way, that the uppermost part of the branches injured by the air during the ebb dies off and grows out again as milder environmental influences play upon it. This is concluded from the frequent occurrence of renewed growth in the branches of young, sterile specimens. Such renewed growth of branches and rhizoids is before described in *Acrosiphonia flabelliformis* (Jónsson Icel. Alg. p. 371, fig. 16 a, fig. 17 b-e).

Regarding the structure of the chromatophore the Greenlandic specimens fully agree with the Icelandic plants (Jónsson Icel. Alg. p. 368), and the largeness of the meshes of the chromatophore is, I think, not to be relied upon as a specifically distinctive character. As *A. incurva* Kjellm. differs from *A. centralis* (Lyngb.) Kjellm., only by the largeness of the meshes of the chromatophore, I think that on further investigation they will turn out to be identic, and in that case the older name, *A. centralis* (Lyngb.) Kjellm., should be used.

Some rather peculiar specimens have been collected by

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Jessen at the northern side of Sermersok. They form tufts 1—2 cm. high, incurved branches are rather frequent, and the sporangia occur singly. On the whole the specimens mostly agree very well with *A. incurva*, but they differ from it by the occurrence of rhizoids in the uppermost part of the frond and by having the branches of last order sometimes given off at right angles. The rhizoids occur somewhat irregularly in th

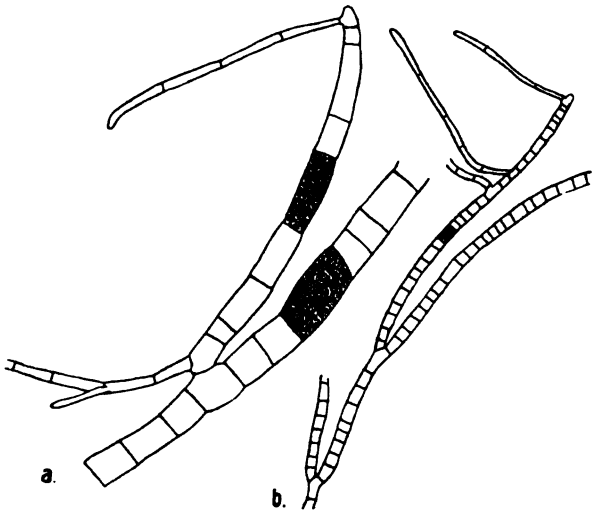

Fig. 5 *Acrosiphonia incurva* Kjellm.

Two fragments of the specimens from Sermersok. Compare the text.

a contains two singly occurring sporangia; the branch to the left shows at the base a normal rhizoid, at the apex an abnormally developed one. 47 : 1.

b shows a single sporangium and abnormally developed rhizoids becoming branches. 13 : 1.

uppermost part of the frond, and sometimes shoots from the upper ends of the cells, that is shoots which should have been branches, are developed as rhizoids, and vice versa, shoots from the lower ends of the cells, that is shoots which should have been rhizoids, are developed as branches. Fragments of main branches with young branches and young rhizoids occur loosely

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entangled. These fragments doubtlessly give rise to new plants. On the whole the upper part of the frond of these specimens is frangible and consists of many loosely interwoven fragments between the main branches. On account of the loose condition of the frond the fragments probably have changed their position in proportion to the direction of the light, and thus branches have become rhizoids and rhizoids branches.

Specimens collected by Rosenvinge at Godthaab in a depth of 5 fathoms, entangled between Desmarestia aculeata are analogous to the f. *debilis* of *A. hystrix*. These specimens have certainly been removed from the coasts by the current, and afterwards thrown down to the bottom of the sea and entangled between the Desmarestia.

The specimens determined by Rosenvinge as *Cladophora arcta* f. *pulvinata* (l. c.) are rather young, gregariously growing plants of *A. incurva*.

The species is littoral, it has only seldom been collected at low-water mark and occasionally in the upper part of the sublittoral region. It was collected in February—March and May—August, with sporangia in June—August.

The species seems to be common in West Greenland.

Gr. occ.: Umanak (Sören Hansen); Atanikerdluk, Ujaragsugsak (N. H.); Godhavn (L. K. R.); Orpigsuit near Christianshaab (N. H.); Sukkertoppen, Ny Hernhut (L. K. R.); Godthaab (Vahl, L. K. R.); Island near Frederikshaabs Glacier, Frederikshaab, Smallesund (L. K. R.); Neriak (N. H.); Ivigtut (L. K. R.); Sermilik Fjord (A. Jessen); Ataneritsok (Igaliko) (L. K. R.); Kakortok (Vahl); Kagsimiut, Julianehaab (L. K. R.); Sardlok, Umanartut, the northern side of Sermersok (A. Jessen); Tasermiut prope Korsoak, Nanortalik (Vahl).

Gr. or.: Ikerasak, Angmagsivik, Smalsund, Nualik.

Geogr. distribution: Iceland, The Færöes, Norway.

84. **A. hystrix** (Strömf.), Jónsson Icel. Alg. p. 368; Spongomorpha hystrix Strömfelt, Om algvegetationen vid Islands kuster

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p. 54; Cladophora (Spongomorpha) arcta γ. hystrix, K. Rosenv. Grl. Havalg. p. 907.

The Greenlandic specimens are 4—15 cm. high and the thickness of the upper branches is varying from 200—500 μ. The sporangia mostly occur singly or two or three together, but up to 6 sporangia in a continuous row are not rare. Neither spinous, nor hooked or incurved branches are met with. The tufts are loose and almost not entangled [in f. *typica*] or somewhat entangled at the base As in other species of *Acrosiphonia* the main branches are much narrower below than above. As in *A. incurva* the main axis of young plants terminates in an axile rhizoid, which afterwards dies off; sometimes it is replaced by a new axile rhizoid, but in older plants the lower end of the main axis usually dies off. Lateral rhizoids are rare in the typical form, but rather frequent in the f. *littoralis*; they never occur in such quantities as in *A. incurva*. The lowest rhizoids are often unilaterally placed while the upper rhizoids are opposite, alternate or scattered. The basal cell of the rhizoids is usually considerably enlarged, it is lobed or irregularly branched and sometimes it emits stolons from which erect filaments arise. Renewed growth of injured rhizoids and branches as described in *A. incurva* (p. 43—44) also occurs in this species. The young apices of the branches produced in this manner sometimes resemble flagelliform

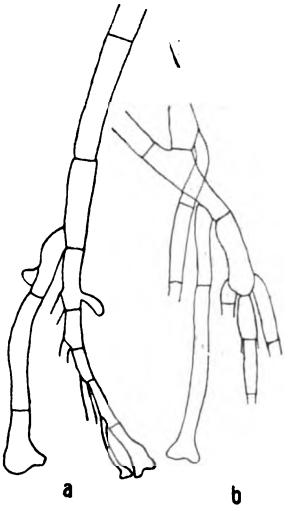

Fig. 6. *Acrosiphonia hystrix* (Strömf.).
a the basal portion of a young specimen showing an axile rhizoid and mostly secund lateral rhizoids. 47 : 1.
b the basal portion of an older plant showing an axile rhizoid produced by renewed growth dying off, besides both opposite and scattered lateral rhizoids. 47 : 1.

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branches. The Greenlandic material of this species agrees well with the Icelandic plants (Jónsson l. c.) and three forms connected with numerous intermediate forms are distinguishable.

f. **typica** Jónss. l. c. p. 368.

Large specimens about 7—15 cm. high, and about 300—500 μ thick, only at the base loosely entangled. Occurs in the sublittoral region down to a depth of 7 fathoms.

f. **littoralis** Jónss. l. c. p. 370.

This form is lower than the typical form, 4—about 10 cm. high, and narrower, about 200—300 μ thick, and much more richly entangled in the lower part of the frond. Occurs at low-water mark and in the uppermost part of the sublittoral region.

f. **debilis** K. Rosenv. Grl. Havalg. p. 908.

This form has only been collected loose and entangled between other algæ as *Dictyosiphon foeniculaceus* f. *flaccida* and *Chætomorpha Melagonium*, in sheltered places in a depth of 3—7 fathoms. The specimens are low and 190—260 μ thick. It seems to be most closely related with the f. *littoralis* from which it differs especially by the peculiar, often unilateral branching (cfr. Rosenvinge's description l. c.).

The species was collected in May—August, with sporangia in June—August. It grows in the littoral region near low-water mark, and in the sublittoral region down to a depth of 7 fathoms. It mostly occurs on stones and rocks, but occasionally also on different algæ.

The species is presumably common in West Greenland.

Gr. occ.: Upernivik (L. K. R.); Sarkak in Vajgat, Unartok in Vajgat, Ujaragsugsak in Vajgat, Klokkerhuk (N. H.); Godhavn (L. K. R.); Agto (Sörensen); Tatsip-ata (N. H.); Holstensborg (Th. Holm, L. K. R., N. H.); Sukkertoppen (L. K. R.); Godthaab (L. K. R., C. Petersen); Merkuitsok, Fiskernæsset (L. K. R.); Frederikshaab, Nigamiut pr. Frederikshaab, Kvannefjord (N. H); Ivigtut (L. K. R.);

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Narsak (L. K. R.); Kagsimiut (H. Lassen); Umanarsuk, Kimatulivigsalik, Kitsigsut Öer (A. Jessen).

Gr. or.: Ikerasak, Tiningnekelak, Angmagsivik, Smalsund, Ödesund, Nualik.

A. penicilliformis (Fosl.) Kjellm., Acrosiphonia p. 80; Cladophora (Spongomorpha) arcta δ. penicilliformis K. Rosenv. Grl. Havalg. p. 908.

I have with some doubt referred a single specimen to this species. Terminal sporangia did not occur, but as the upper part of many branches had died off, I think it probable that the rows of emptied terminal sporangia had been thrown off. Some intercalary sporangia occurring singly have been observed. In other respects the Greenlandic specimen agrees well with this species.

It was collected in July, on rocks in the littoral region.

Gr. occ.: Godthaab (L. K. R.).

Geogr. distribution: Iceland, Norway.

Spongomorpha (Kütz.).

The genus *Spongomorpha* is here defined as proposed by Wille [1]) and thus only includes species with a single nucleus in each cell. Thus defined the genus is identical with Kjellman's subgenus *Isochrous* (Acrosiphonia p. 82).

S. vernalis (Kjellm.), Acrosiphonia vernalis Kjellm., Acrosiphonia p. 82; Cladophora lanosa K. Rosenv. Deux. Mém. p. 103.

This species is known only from one place in Greenland, and the specimens in question have already been mentioned by Rosenvinge (l. c.). Rosenvinge remarks that, before Kjellman's work on *Acrosiphonia* was published, he would certainly have referred the specimens to *Cladophora lanosa*. In a footnote (l. c. p. 103) Rosenvinge points out that these specimens only contain one nucleus in each cell; this is a highly important

[1]) Botaniska Notiser 1899, p. 281.

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statement, as all other *Cladophoraceæ* have many nuclei in each cell. Later on, Wille has shown, that some species belonging to the subgenus *Isochrous* Kjellm. only contain one nucleus in each cell, and I too only found one nucleus in each cell in *Spongomorpha vernalis* (Kjellm.) and *Spongomorpha* sp. from Iceland (Icel. Alg. p. 366).

The Greenlandic species are about 1,5—2 cm. high, about 30 μ thick below, and about 40—50 μ thick above. Hooked and incurved branches occur. The specimens fully agree with the description and figures (l. c. Tab. V) given by Kjellman, and the only difference is, that the Greenlandic plants are somewhat thicker than the plants described by Kjellman. The specimens are sterile, and were collected in July in a littoral pool, 15—20 feet above the level of the sea.

Gr. occ.: The rock Nunanguak west of Umanak 60° 34′ (A. Jessen).

Geogr. distribution: Iceland, Kattegat.

Cladophora (Kütz.).

85. **C. gracilis** (Griff.) Kütz., K. Rosenv. Grl. Havalg. p. 910.

The specimens from East Greenland entirely agree with the West Greenlandic plants referred by Rosenvinge to this species. The plants occurred in company with *Chætomorpha tortuosa*, *Stictysiphon tortilis* a. o. The species was collected in September and had some few sporangia.

Gr. or.: Tasiusak.

Rhizoclonium Kütz.

86. **Rh. riparium** (Roth) Harv., K. Rosenv. Grl. Havalg. p. 913, Deux. Mém. p. 103.

a. **polyrhizum** K. Rosenv. Grl. Havalg. l. c.

The filaments are 17—29 μ thick, in other respects the specimens entirely agree with the description. It was collected in September.

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Gr. or.: Angmagsalik, Unartok (in thermal water in the littoral region).

Chætomorpha Kütz.

87. **Ch. tortuosa** (Dillw.) Kleen, K. Rosenv. Grl. Havalg. p. 917, Deux. Mém. p. 104.

It was collected sterile in September in company with *Cladophora gracilis* and *Chætomorpha Melagonium*.

Gr. or.: Tasiusak.

88. **Ch. Melagonium** (Web. et Mohr) Kütz., K. Rosenv. Grl. Havalg. p. 917, Deux. Mém. p. 104.

The species was gathered in May—September in a depth of 1—8 fathoms (f. *typica*) and in the littoral region (f. *rupincola*), both in sheltered and exposed places.

f. *typica*.

The typical form seems to be common.

Gr. or.: Tasiusak, Kangarsik, Ikerasak, Tiningnekelak, Smalsund, Stenö, Ödesund, Kangerdlugsuatsiak, Turner Sund, Sabine Ö.

f. *rupincola*.

The specimens are 9 cm. high and overgrown with Diatoms.

Gr. or.: Nualik.

Urospora Aresch.

89. **U. mirabilis** Aresch., K. Rosenv. Grl. Havalg. p. 918, Deux. Mém. p. 106.

The specimens belong to the typical form. The fructiferous filaments are up to 70 μ thick. The species was collected in June, July and September, with sporangia in June and September. Occurs in company with *Ulothrix flacca* and other species of *Ulothrix*.

Gr. or.: Smalsund, Nualik.

Fam. *Mycoideaceæ*.

Pringsheimia Rke.

90. **P. scutata** Rke., K. Rosenv. Grl. Havalg. p. 924.

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It grows on *Chætopteris plumosa* and *Sphacelaria racemosa* and was collected, sterile in August and September.

Gr. occ.: Ivigtut (L. K. R.) on *Sphacelaria racemosa* and *Polysiphonia urceolata.*

Gr. or.: Smalsund, Kangerdlugsuatsiak.

Ulvella Crouan.

91. **U. confluens** K. Rosenv. Grl. Havalg. p. 924, Deux. Mém. p. 109.

This species occurs on the stipe of *Laminaria saccharina* and on the frond of *Rhodymenia palmata* amongst other epiphytes. The plants on the *Laminaria* stipe were sterile and fully resembled the description of the older plants (K. Rosenv. Grl. Havalg. l. c. fig. 39 B), while the plants on *Rhodymenia* were fructiferous and agreed with the description of the younger plants. It was collected in July with sporangia as far down as to 5 fathoms.

Gr. or.: Tiningnekelak, Turner Sund.

92. **U. fucicola** K. Rosenv. Grl. Havalg. p. 926, Deux. Mém. p. 109.

It was collected sterile in June growing on *Fucus inflatus* and *Fucus vesiculosus.*

Gr. or.: Kap Dan.

Chætobolus K. Rosenv.

93. **Ch. gibbus** K. Rosenv. Grl. Havalg. p. 928, Deux. Mém. p. 110.

Fully typical specimens (K. Rosenv. Grl. Havalg. l. c. fig. 41) were collected in July growing in *Sorapion Kjellmani* on *Chætomorpha Melagonium.*

Gr. or.: Tiningnekelak.

Fam. *Chætophoraceæ.*

Arthrochæte K. Rosenv.

94. **A. penetrans** K. Rosenv. Deux. Mém. p. 110.

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Acrochæte Pringsh.

95. **A. parasitica** Oltm., K. Rosenv. Deux. Mém. p. 114.

Bolbocoleon Pringsh.

96. **B. piliferum** Pringsh., K. Rosenv. Grl. Havalg. p. 134, Deux. Mém. p. 115.

The species was abundant in old fragments of *Stictyosiphon tortilis*, which were found in company with *Pylaiella littoralis* and *Isthmoplea sphœrophora* floating in the water, in a hole in the ice of the lagoon, north of Kap Dalton. It was found sterile in July.

Gr. or.: Kap Dalton (N. H.).

Fam. *Ulothricaceæ*.

Ulothrix Kütz.

Key to the species:

I. Filaments 14—80 μ thick generally containing 2—3, rarely 1 or 4 pyrenoids in each cell ..... U. flacca

II. Filaments 7—23 μ thick containing only one pyrenoid in each cell.

A. Chromatophore thickened in one end.

a. Without rhizoids.

o. Basal cell tapering downwards.

1. Chromatophore generally almost fills the length of the cell..... U. pseudoflacca f. typica

2. Chromatophore does not fill the length of the cell ..... U. pseudoflacca f. tenuior

oo. Basal cell discoidally widened at the base U. scutata

b. With rhizoids.

o. Basal cell discoidally widened at the base, no coalescent filaments ..... U. scutata

oo. Basal cell slightly narrowed at the base, coalescent filaments occur.

1. Filaments straight, the coalescent filaments

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adhere in their whole length; no unbroken basal layer ..... U. consociata f. typica

2. Filaments often kneed at intervals, coalescent only at the base, forming an unbroken basal layer ..... U. consociata var. islandica

B. Chromatophore thickened in the middle.. U. subflaccida

97. **U. flacca** (Dillw.) Thur., K. Rosenv. Grl. Havalg. p. 935, Deux. Mém. p. 115; Wille, Studien p. 18.

This species has been so exhaustively described by Rosenvinge (Grl. Havalg. l. c.) and Wille (l. c.) that I have nothing to add.

The filaments usually contain 2—3 pyrenoids in each cell, but cells with one, or, in the thicker filaments with four pyrenoids are not rare. The number of pyrenoids seems to be dependent on the size of the cell, that is, larger cells contain more pyrenoids than smaller ones, as pointed out by Wille (l. c. p. 20).

The American *U. flacca*, as it is figured and described by Hazen (Am. Ulothricaceæ p. 155, pl. 20, fig. 7—9), cannot in my opinion be regarded as identic with the Greenlandic and North European species. *U. flacca* Hazen is 10—25 μ thick and contains only one pyrenoid in each cell, it is moreover most likely without rhizoids, as the rhizoids are neither figured nor mentioned in the description. The Greenlandic species is 14—80 μ thick, contains 1—4 pyrenoids in each cell, and has rhizoids. Hazens species seems to be nearly related to *U. pseudoflacca* Wille and the two species are thus most naturally regarded as identic by Hazen (Am. Ulothricaceæ p. 156); but *U. pseudoflacca* Wille is so different from the species named *U. flacca* from Greenland, Iceland, the Færöes and Norway, that any confounding of the two species seems to be excluded, while specimens of *U. pseudoflacca* from Greenland have been determined as *U. implexa* Kütz.

As to the distribution of the species in West Greenland

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there is nothing to add except some few localities, which may be regarded as unimportant, the species certainly being common in West Greenland.

The plants from East Greenland fully agree with the West Greenlandic specimens. They were gathered in June and July. Specimens with typical gametangia (Rosenv. Grl. Havalg. fig. 44 C) were collected in June.

Gr. or.: Ikerasak, Angmagsivik, Kangerdlugsuatsiak, Nualik.

98. **U. pseudoflacca** Wille Studien p. 22, U. implexa K. Rosenv. Grl. Havalg. p. 936, Deux. Mém. p. 115, pro parte.

This species frequently occurs in the Greenlandic collections. The specimens are somewhat varying, especially regarding the length of the cell, and sometimes also as to the shape of the basal cell. As a rule the basal cell is somewhat narrowed towards the base, as described by Wille (l. c.), but in specimens growing on *Acrosiphonia* I have occasionally met with basal cells, the bases of which were somewhat expanded and marked from the upper part of the cell by a slight narrowing. As the specimens on *Acrosiphonia* in other respects agree with this species, and the different shape of the basal cells gradually runs into the normal shape, I have referred them to *U. pseudoflacca*.

The length of the cell is considerably varying; usually it varies from $^1/_4$ of the breadth to as much as the breadth, but sometimes the cells are $1\,^1/_2$ times longer than broad. The length of the gametangia and zoosporangia varies in the same way as in the vegetative cells. The sporangia are usually of the same shape as the sterile cells, but sometimes they are somewhat thicker and of a more round shape. The zoosporangia contain 4—8 zoospores of the typical shape. Most frequently both zoosporangia and gametangia occur in the same filament. The thickness of the filaments varies from 9—23 μ. In other respects the structure of the cell of the Greenlandic specimens agrees

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with the original description. The cromatophore usually seems to fill the length of the cell, but cells containing an chromatophore shorter than the cell, are not rarely met with in the filaments. The thickness of the cell walls varies considerably, according to age and growing places. The thicker walls are about 3 μ. Specimens distinctly narrowed at intervals are occasionally met with (fig. 7).

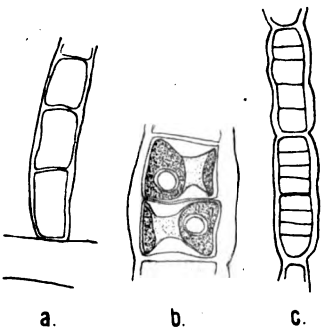

Fig. 7. *Ulothrix pseudoflacca* Wille.
a, a base of a filament. 667 : 1.
b, two cells showing the shape of the single chromatophore and the position of the single pyrenoid. 667 : 1.
c, a fragment of a filament showing the constriction, compare the text. 277 : 1.

f. **tenuior** nov. f.

Somewhat different specimens have been collected, growing on *Acrosiphonia*, or loose between *Pylaiella littoralis*. The filaments are 7—14 μ thick; they are frequently thickest in the middle and tapering towards the apex and towards the base (7 μ at the base, 14 μ in the middle and 9 μ in the upper part). The basal cell is somewhat longer than in the typical form, and tapering towards the base. The upper part of the filaments was fructiferous, while the lower part frequently was sterile. The cells are generally longer than in the typical form, and their length varies from $^1/_2$ of the breadth to twice as much as the breadth. Both gametangia and zoosporangia sometimes occur in the same filament. The zoosporangia contain up to 8 zoospores. The sporangia are frequently thicker and of a more rounded shape than the sterile cells. The cell walls are usually thin, especially in young filaments, and in fructiferous plants the thickness of the walls does not amount to more than 1,5 μ. Generally the chromatophore does not fill the length of the cell, it is usually distinctly belt-shaped and contains one lateral pyrenoid in the broader end. Sometimes the chromatophore seems to resemble

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a curved plate with a somewhat lobed margin. In some respects these specimens resemble *U. subflaccida*, but they differ from it by the lateral position of the pyrenoid. As the specimens in some respects differ from the typical *U. pseudoflacca*, I have referred them to a new form, f. *tenuior*, which form, although not sharply defined, may, I think, be distinguished from the typical form by the following characters: The chromatophore usually does not fill the length of the cell, sometimes has a lobed margin, and the cells are longer. This form seems to me to be very much like *U. implexa* Hazen Am. Ulothricaceæ pl. 21, fig. 1, 2).

The species occurs on stones and rocks in the littoral region. Sometimes it has been collected in fresh water, beneath high-water mark. It is not rarely found in company with *U. flacca*, occasionally rather gregarious, forming green strata on the rocks. The species is also found growing on *Fucus* and *Acrosiphonia*, and sometimes entangled between other algæ. Specimens with gametangia were gathered in May—July, with zoosporangia in May and July. It occurs both on exposed and sheltered coast.

f. *typica* is certainly common in West Greenland.

Gr. occ.: Atanikerdluk, Sarkak in Vajgat (N.H.); Inilik in Atanek Fjord (P. H. Sörensen); Holstensborg (N.H.); Godthaab (L.K.R.); Frederikshaab (L. K. R., N.H.); Arsuk (H. Lassen); Issa west of Arsuk Fjord, Arsuk Storö (L.K.R.); Upernivik Island near Kagsimiut (H. Lassen); Sydpröven, Umanarsuk, the south end of Amitsok opposite Sermersok, Nanortalik, Kimatulivigsalik, Kitsigsut Öer (A. Jessen).

Gr. or.: Ikerasarsuk (Vahl); Smalsund.

f. *tenuior*.

Gr. or.: Nunatsuk (Sylow).

Geogr. distribution: Iceland, The Færöes, Norway.

U. scutata nov. sp.

The filaments are usually distinctly narrowed at intervals, 5—6 μ thick in the lowest part and 9—16 μ thick in the upper

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part. The base of the basal cell is discshaped, with even or lobed margin, and marked from the upper part of the cell by a distinct constriction. The cells in the lowest part of the filament are as broad as long, or three times longer than broad, in the upper part their length is varying from 1/3 of the breadth to about as much as the breadth. The chromatophore is belt-shaped and contains one lateral pyrenoid in its broader end; it does not fill the length of the cell. The single nucleus has a lateral position in the cell. The zoosporangia contain at least 8 spores.

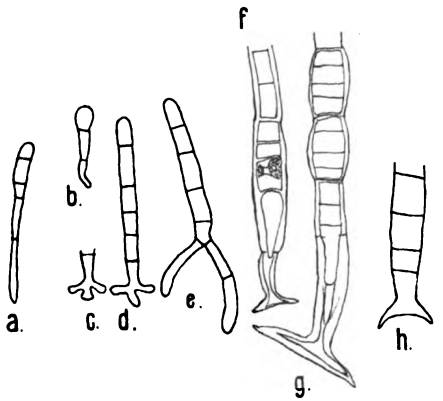

Fig. 8. *Ulothrix scutata* nov. sp.
a, b, two young plants with an elongated basal cell.
c, d, two young plants showing a lobed basal cell.
e, a young plant with an extramatrical rhizoid.
f, g, h, the basal portion of older filaments showing the discoidally widened lower end of the basal cell; in f and g the constrictions of the filaments and intramatrical rhizoids may moreover be seen.
a, b, c, d, e 168 : 1; f, g, h 422 : 1.

The specimens were found in the littoral region on species of *Acrosiphonia*. The filaments jut out freely from the substratum; they are usually distinctly constricted at intervals; every articulation (ɔ: the space between two constrictions) usually contains 4 cells and only sometimes more than 4 cells, that is, when some of the cells or all 4 have been divided without any distinct new constriction. The lower part of the filament is 5—6 μ thick, and much narrower than the remaining part of the filament, the thickness of which varies between 9 and 16 μ. The cells of the narrower, basal part of the filaments are as long as broad, or up to three times longer than broad, while the

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length of the cells in the thicker part of the filament varies from about 1/3 of the breadth to as much as the breadth. The basal cell of young filaments is elongated, and either of the same thickness all over, or tapering towards the base. As the plants grow older the base of the basal cell is enlarged into a kind of basal disc, of the shape of a watch-glass, turning its concave side towards its substratum, the branches of *Acrosiphonia*; the margin of this basal disc is either entire or lobed or even palmate. The disc, or the discoidally enlarged base of the basal cell, is very distinctly marked from the upper part of the basal cell. The part of the basal cell which is next to the disc is often distinctly constricted, has thick walls and narrow lumen. Rhizoids are frequent, both extramatrical even in young plants, and intramatrical especially in older plants, but the filaments are not rarely destitute of rhizoids. The cell only contains a single, lateral nucleus. The chromatophore is belt-shaped and does not fill the length of the cell; it contains a single lateral pyrenoid in its broader and thicker end.

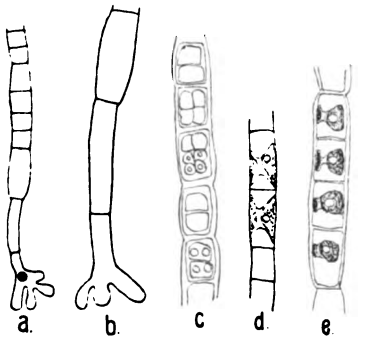

Fig. 9. *Ulothrix scutata* nov. spec.

a, b, The inferior part of two filaments showing the narrower basal portion and the lower portion of the thicker superior part, besides the lobed basal cell. In a the filament has been removed from the substratum, the discoidally widened lower end of the basal cell is unilaterally developed, and we look from below into the lumen of the cell. a 277 : 1; b 667 : 1.

c, a fragment of a filament showing the imperfectly divided zoosporangia. 422 : 1.

d, a fragment showing the shape of the chromatophore and the position of the single pyrenoid. 422 : 1.

e, a single articulation (compare the text) composed of 4 cells, showing the shape of the chromatophore and the position of the single pyrenoid. 667 : 1.

I have not met with specimens with fully ripe sporangia,

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but judging by the stages of division of the sporangia shown in fig. 9 c, the number of the spores is at least 8.

The species is nearly related to *U. pseudoflacca* but differs from it essentially by the peculiar shape of the basal cell and the occurrence of rhizoids. The frequent constrictions of the filaments may be regarded as another difference, probably less important.

The species was collected in the littoral region in July —August, with unripe sporangia in July.

Gr. occ.: Umanalik east of Kangek Ö, 60° 36′, a rock near Kaersok, 60° 29′, the south side of Tusardluarnak, 60° 7′ (A. Jessen).

99. **U. consociata** Wille Studien p. 25.

To the typical form of this species I have referred some specimens collected by L. K. Rosenvinge at Godthaab, in rock-pools near high-water mark. The specimens occurred in company with blue-green algæ and some green algæ resembling stages of *Pleurococcus*. The filaments are 7—10 μ thick, and the length of the cell is varying from $^1/_4$ of the breadth to about as much as the breadth. Well developed rhizoids occur. The filaments are considerably narrower than in the Norwegian plants, and probably the specimens may be regarded as a f. *minor*.

Specimens collected by Jessen in the littoral region at Umanalik seem to be fully identic with Wille's species. The filaments are 14—22 μ thick, and the length of the cell varies from about $^1/_3$ to $^3/_4$ of the breadth. Rhizoids are abundant, and coalescent filaments have sometimes been met with. Filaments, that were indistinctly narrowed at intervals, occasionally occurred.

Gr. occ.: Godthaab (L. K. R.); Umanalik (A. Jessen).

var. **islandica** Jónss. Icel. Alg. p. 354, U. implexa K. Rosenv. Grl. Havalg. p. 936 ex parte.

Typical specimens of this variety have been collected by

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Rosenvinge near the glacier of Kornok, growing on *Fucus inflatus*, in company with *Ulvella fucicola*. The plants occur gregariously, almost totally covering the substratum. The filaments are 14—16 μ thick and the length of the cell varies from $^1/_6$ to $^2/_3$ of the breadth. The filaments coalesce below as in the Icelandic plants. The rhizoids are well developed

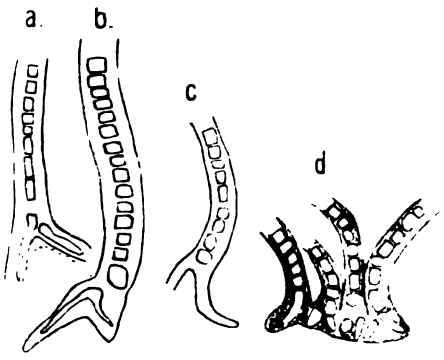

Fig. 10.

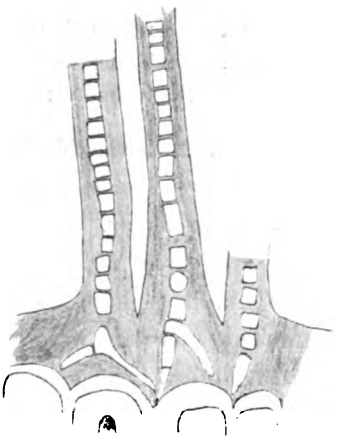

Fig. 11.

Ulothrix consociata Wille var. *islandica* Jónss.
Fragments of the specimens from Kornok.

Fig. 10. a, b, c, The basal portion of three filaments showing rhizoids. d, shows 4 filaments coalescent at the base. a, b, c, d 311 : 1.

Fig. 11. Transverse section of the frond of Fucus inflatus. The basal layer of the Ulothrix formed by the coalescent basal portions of the filaments covers the surface of the host with an unbroken growth. The rhizoids seem to penetrate the intercellular substance of the host. Beneath the basal layer of the Ulothrix the epidermal cells of the Fucus may be seen in the figure. 422 : 1.

and sometimes seem to penetrate the intercellular substance between the outmost cells of the host. The filaments are occasionally indistinctly kneed at intervals, and sometimes irregularly constricted. Sometimes the filaments are of an irregular appearance, caused by cells growing through emptied sporangia or dead cells. The chromatophore contains one lateral pyrenoid.

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Regarding the structure of the chromatophore and the structure of the cell altogether, the Greenlandic specimens fully agree with the Icelandic plants. With gametes in July.

The specimens from East Greenland occurred on *Rhodymenia palmata*, they essentially resemble the above mentioned plants from West Greenland. The filaments are 14—16 μ thick, and the plants were less abundant.

Gr. occ.: Kornok (L. K. R.).

Gr. or.: Tiningnekelak.

Geogr. distribution: Iceland, The Færöes, Norway.

100. **U. subflaccida** Wille Studien p. 27.

To this species I have only referred some few, young, and sterile specimens. They fully agree with Wille's description and are easily recognizable by the position of the pyrenoid. The chromatophore does not fill the length of the cell and frequently occurs with a lobed margin. The filaments are 7—16 μ thick. The plants were found together with *Percursaria percursa*, *Acrosiphonia* sp. and *Urospora mirabilis*.

Hazen (Am. Ulothricaceæ p. 155) remarks, that *U. subflaccida* Wille apparently is identic with *U. implexa* Kütz. Whether *U. implexa* Kütz. is identic with any of the new species of *Ulothrix* described by Wille (l. c.) or not, must be left undecided until further examination of Kützing's original specimens has taken place, but judging from the description and figures (Hazen l. c. Pl. 21, fig. 1, 2) the American *U. implexa* does not seem to be identic with *U. subflaccida* (cfr. above p. 57).

Gr. occ.: Julianehaab (N. H.).

Gr. or.: Smalsund.

Geogr. distribution: Iceland, Norway.

Fam. *Ulvaceæ*.

Monostroma (Thur.).

101. **M. fuscum** (Post. et Rupr.) Wittr., emend. K. Rosenv. Grl. Havalg. p. 940, Deux. Mém. p. 116.

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The specimens from East Greenland entirely agree with Rosenvinge's exhaustive description of the species (Grl. Havalg. l. c.). The size of the plants is somewhat varying. Young plants 2—5 cm. long and 0,5—2 cm. broad fully resemble the figures given by Rosenvinge (Grl. Havalg. fig. 48). The larger specimens are 10—30 cm. long and 5—20 cm. broad. The thickness of the frond varies between 39 and 44 μ. The species was gathered in May—July, and September, with zoospores in June, July, and September. In a single place it is said to have been dredged up from a depth of 5—19 fathoms.

As well known, Rosenvinge found (l. c.), that this species contains two chromatophores in each cell, one in each end of the cell, facing each of the two sides of the frond. In this respect *M. fuscum* differs from other species of *Monostroma* as, for example, *M. Grevillei*, which only contains one chromatophore in each cell facing the primary surface of the frond (Rosenv. l. c.). The occurrence of two chromatophores in each cell in *M. fuscum* is highly important and should be mentioned in the description of the species [1]).

Gr. or.: Tasiusak, Ikerasak, Tiningnekelak, Angmagsivik, Smalsund, Nualik.

102. **M. leptodermum** Kjellm., K. Rosenv. Grl. Havalg. p. 944, Deux. Mém. p. 117.

The largest specimen collected is 21 cm. long, and its largest breadth is 14 cm. Right above the tubular stipe the frond is 10 μ thick. The specimens are well agreeing with typical plants of this species, except in the largeness of the frond. The plants were collected in July.

Gr. or.: Tiningnekelak.

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[1]) F. S. Collins (The Ulvaceæ of North America, Rhodora, Journal of the New England Botanical Club, Vol. 5, No. 1, 1903) does not at all mention this important character neither in the description of the species nor in the description of the genus *Monostroma*.

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103. **M. Grevillei** (Thur.) Wittr., emend. K. Rosenv. Grl. Havalg. p. 946, Deux. Mém. p. 117.

α. **typica** K. Rosenv. Grl. Havalg. p. 947.

Some few specimens of this variety have been collected. The frond is 17 μ thick, with somewhat thickened outer membrane.

β. **Vahlii** (J. Ag.) K. Rosenv. Grl. Havalg. p. 949.

Some small specimens of this variety have been collected; they agree well with the description, are up to 10 cm. long, with tubular frond.

γ. **arctica** (Wittr.) K. Rosenv. Grl. Havalg. p. 949.

Besides typical specimens the collection contains plants having an intermediate position between this and the following variety; they are up to 45 cm. long, with the uppermost part of the frond split into a few narrow segments, while the lower part, about $^2/_3$ of the frond, is tubular. The thickness of the frond is 43 μ at a distance of 1 cm. from the base, in the upper part the frond is somewhat thinner and thus measures only 39 μ in the lower part of the segments. Such specimens may as well be referred to one as to another of the named varieties.

δ. **intestiniformis** K. Rosenv. Grl. Havalg. p. 952.

Several typical specimens of this variety have been collected, some of which are much larger than reported by Rosenvinge (l. c.). The largest specimen of this collection is 130 cm. long, while the largest plant measured by Rosenvinge is 53 cm. long (l. c.). The thickness of the frond, measured at about the middle between the base and the apex of the frond, varies from 29—44 μ. A single fructiferous specimen was 44 μ thick at the apex of the frond. As pointed out by Rosenvinge the frond of this variety is not rarely split in its uppermost part.

The species was gathered in June, July, and September, with sporangia in June—July.

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The varieties of this species are very varying and not sharply defined. While the frond of *M. fuscum* is cleft in an early stage of development, without regard to environmental influences, this species always remains tubular in sheltered situations (β and γ), and I think that the tubular frond must be regarded as normal in this species, as the split varieties (α and γ), which grow in the littoral region exposed to the dashing of the waves, in sheltered places occur with tubular frond; such specimens from Iceland have been shortly mentioned by me in Icel. alg. p. 350. The splitting of the frond is, I think, exclusively due to the surroundings, and the variability of the species seems to be caused by environmental influences. According to our present knowledge of these varieties I think it most natural to regard them as belonging to one and the same species, and I cannot admit Collins (l. c. cfr. my footnote p. 63) to be right in dividing *M. Grevillei* K. Rosenv. into two species: *M. Grevillei* Collins including var. *Vahlii* K. Rosenv., and *M. arcticum* Collins including var. *intestiniformis* K. Rosenv. The limit between the two species as understood by Collins, is as indistinct as the limit between the main form of the species and the included varieties. If closely related forms, which run into each other, are not to be regarded as belonging to one and the same species, we had better take as a species every form that can be described plainly enough to be recognizable, than form species of artificially grouped forms.

Gr. or.: Ikerasak (δ), Tiningnekelak (δ), Angmagsivik (α, γ), Smalsund (γ), Nualik (β, δ).

104. **M. groenlandicum** J. Ag., K. Rosenv. Grl. Havalg. p. 954; Deux. Mém. p. 117.

It has been collected in June—July together with *Ulothrix flacca*, *Monostroma Grevillei δ. intestiniformis* and *Rhodomela lycopodioides*. Fructiferous plants were gathered in July.

Gr. or.: Ikerasak, Nualik.

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Enteromorpha (Link.).

105. **E. intestinalis** (L.) Link, emend. K. Rosenv. Grl. Havalg. p. 957, Deux. Mém. p. 117.

a. **genuina** K. Rosenv. Grl. Havalg. l. c.

Some fragments were collected in a single place in July.

Gr. or.: Tiningnekelak.

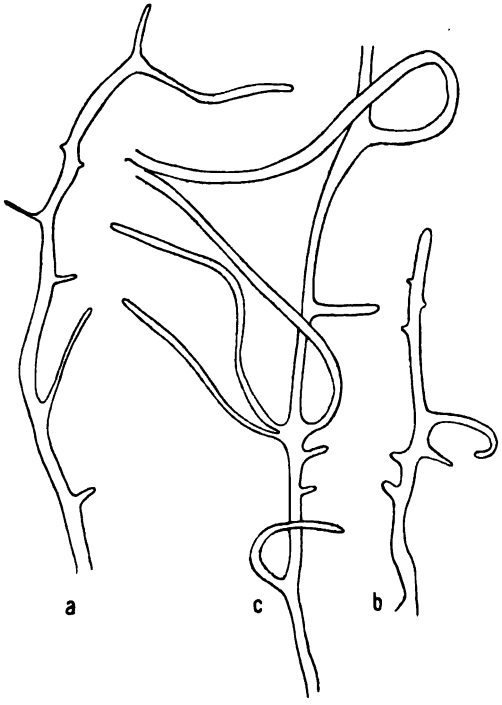

Fig. 12. *Enteromorpha prolifera* O. F. Müll.
a, b show the apex of the frond with young prolifications.
c, a fragment of a specimen at about the middle of the frond.
a, b, c 47 : 1.

106. **E. prolifera** O. F. Müll., K. Rosenv. Grl. Havalg. p. 960, E. micrococca f. subsalsa Börgesen, Freshwater Algæ in the Botany of the Færöes Part I, p. 245, Pl. VIII, fig. 6.

The specimens collected are small and richly proliferous. They habitually resemble *Enteromorpha micrococca f. sub-*

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salsa Kjellm. (The algæ of the arctic sea p. 292, pl. 31, fig. 1—3) but still they differ from it in many respects, while they seem to be identic with *E. micrococca* f. *subsalsa* Börgesen (Freshwater Algæ l. c.). The Greenlandic specimens differ from *E. *micrococca* on account of the anatomical characters in spite of their small cells. The cells are frequently arranged in longitudinal series; seen from above they are usually of angular shape and only rarely somewhat rounded, they are of different size, and sometimes about twice as broad as long. In transverse section the frond also differs from *E. *micrococca* as to the shape of the cells and the thickness of the walls, but agrees essentially with *E. prolifera*. Such specimens in many respects resemble *E. arctica* J. Ag. and probably might be regarded as a very proliferous form of that species; as *E. arctica* has before been included in *E. prolifera* (Rosenv. l. c.) such extreme forms of the latter with the small cells might be called f. *arctica* (J. Ag.) (cfr. Collins, Ulvaceæ l. c. p. 22).

The specimens occurred in company with *Percursaria percursa* on somewhat overflowed shore. Gathered in July.

Gr. or.: Dunholm.

Percursaria Bory.

107. **P. percursa** (Ag.) K. Rosenv. Gr. Havalg. p. 963.

It has been collected in a single place on the eastern coast of Greenland together with *Enteromorpha prolifera*. The filaments consist of two rows of cells. It was collected with zoospores in July.

Specimens collected by Rosenvinge June 5, 1888 at Igdlorsuit in West Greenland are furnished with rhizoids. The rhizoids often occur abundantly, they usually consist of a single cell, sometimes of more than one and occasionally they seem to be transformed into branches. The specimens essentially resemble the branched Icelandic plants (Jónsson Icel. Alg. p. 343,

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fig. 4). They occurred in company with *Enteromorpha prolifera*, *Ulothrix* sp. and *Calothrix scopulorum*.

Gr. occ.: Igdlorsuit (L. K. R.).

Gr. or.. Dunholm.

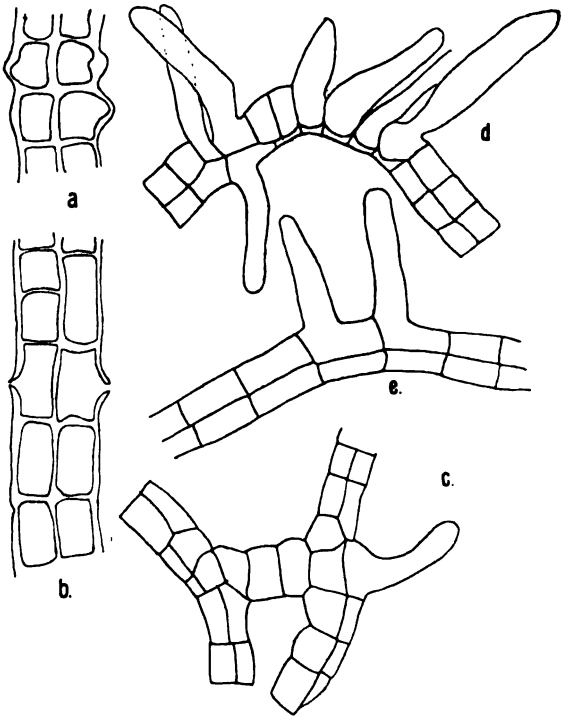

Fig. 13. *Percursaria percursa* (Ag.) K. Rosenv.

a, a fragment of a filament with ripe sporangia, in the prominent part of the walls of the sporangia, the opening is going to be. 527 : 1.

b, a fragment of a filament showing the opening of two emptied sporangia. 527 : 1.

c, a fragment of a branched specimen with a rhizoid to the right. 267 : 1.

d, e, fragments with rhizoids. 267 : 1.

Fam. *Protococcaceæ*.

Codiolum Al. Br.

C. gregarium Al. Br., Algarum unicellularum genera nova et minus cognita, Lipsiæ 1855, p. 19; Jónss. Icel. Alg. p. 338—340; C. Nordenskioeldianum K. Rosenv. Deux. Mém. p. 118.

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This species was formerly known only from a single place in Greenland, Godthaab (Rosenv. Deux. Mém. l. c.). The specimens I have had for examination occurred in company with *Ulothrix consociata* Wille and were all young and small. The stipe was 102 μ long, the head 51 μ long and 6 μ broad. The head is distinctly marked from the stipe by a constriction. It was collected sterile in July in the littoral region.

Gr. occ.: Umanalik east of Kangek Ö, 60° 36′ (A. Jessen).

Chlorochytrium Cohn.

108. **Ch. Cohnii** Wright, K. Rosenv. Grl. Havalg. p. 963, Deux. Mém. p. 119.

Occurred in the gelatinous sheaths of *Diatoms.*

Gr. occ.: Igdlunguak south of Merkuitsok (N. H.).
Gr. or.: Tiningnekelak.

109. **Ch. inclusum** Kjellm., K. Rosenv. Grl. Havalg, p. 963, Deux. Mém. p. 119.

In the frond of *Turnerella Pennyi.* Gathered sterile in August.

Gr. or.: Tasiusak.

110. **Ch. dermatocolax** Rke., K. Rosenv. Grl. Havalg p. 964.

Grows in the outer membrane of *Chætopteris plumosa*, *Sphacelaria racemosa* and *Sphacelaria radicans.* It was collected sterile in June and August—September.

Gr. occ.: Ivigtut, in *Sphacelaria radicans* (L. K. R.).
Gr. or.: Kap Dan, Smalsund, Kangerdlugsuatsiak.

111. **Ch. Schmitzii** K. Rosenv. Grl. Havalg. p. 964, Deux. Mém. p. 119.

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D. Myxophyceæ.

Fam. *Rivulariaceæ.*

Calothrix Ag.

112. **C. scopulorum** (W. et M.) Ag., K. Rosenv. Grl. Havalg. p. 966, Deux. Mém. p. 121.

It has been collected in the littoral region in August 1891 by N. Hartz. It seems to have been abundant.

Gr. or.: Heklahavn (N. H.).

Oscillatoria Vauch.

113. **O. amphibia** Ag., K. Rosenv. Grl. Havalg. p. 967.

It has been collected in July on stones in the littoral region.

Gr. or.: Stenö.

Pleurocapsa Thur.

114. **P. amethystea** K. Rosenv. Grl. Havalg. p. 967.

var. Johs. Schmidt in Jónsson Icel. Alg. p. 378.

The specimens were abundant on the filaments of *Rhodochorton Rothii* in the littoral region, and they agree entirely with the description of the Icelandic plants given by Johs. Schmidt (l. c.), they were collected in July.

Gr. or.: Stenö.

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Principal abbreviations of titles of books.

J. Ag. Grl. Lam. = J. G. Agardh, Bidrag till kännedomen af Grönlands Laminarieer och Fucaceer. K. Svenska Vet.-Akad. Handlingar Bd. 10. No. 8. Stockholm 1872.

J. Ag. Spetsb. Alg. = J. G. Agardh, Bidrag till kännedomen af Spetsbergens Alger. Med Tilläg. K. Svenska Vet.-Akad. Handlingar Bd. 7, No. 8. Stockholm 1868.

Börgesen Fær. Alg. = F. Börgesen, Marine Algæ of the Færöes. Reprinted from the Botany of the Færöes. Part II, Copenhagen 1902.

Hazen Am. Ulothricaceæ = Tracy Elliot Hazen, The Ulothricaceæ and Chætophoraceæ of the United States. Memoirs of the Torrey Botanical Club. Vol. XI, No. 2, 1902.

Jónss. Icel. Alg. = Helgi Jónsson, The Marine Algæ of Iceland. Botanisk Tidsskrift Bind 24—25, Kjöbenhavn 1901 and 1903.

Kjellm. Spetsb. II = F. R. Kjellman, Om Spetsbergens marina, klorofyllförande Thallophyter. II. Bihang till K. Svenska Vet.-Akad. Handlingar Band 4, No. 6. Stockholm 1877.

Kjellm. Arct. Alg. = F. R. Kjellman, The Algæ of the Arctic Sea. Kongl. Sv. Vetensk. Akad. Handlingar Bd. 20, No. 5. Stockholm 1883.

Kjellm. Handbok = F. R. Kjellman, Handbok i Skandinaviens hafsalgflora. I. Fucoideæ. Stockholm 1890.

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K. Rosenv. Grl. Havalg. = L. Kolderup Rosenvinge, Grönlands Havalger. Særtryk af »Meddelelser om Grönland« III. Kjöbenhavn 1893.

K. Rosenv. Algues mar. d. Grl. = L. Kolderup Rosenvinge, Les Algues marines du Groenland. Annales des sciences naturelles, VII. serie, tome 19, 1894.

K. Rosenv. Deux. Mém. = L. Kolderup Rosenvinge, Deuxième Mémoire sur les Algues marines du Groenland. Extrait de »Meddelelser om Grönland« XX. Copenhague 1898.

Sauvag. Sphacelaria = C. Sauvageau, Remarques sur les Sphacélariacées. Journal de Botanique Tome XIV, 1900 and Tome XV, 1901.

Wille, Studien = N. Wille, Studien über Chlorophyceen I—VII, Videnskabs Selskabets Skrifter I, Math.-naturv. Klasse, 1900, Nr. 6, Christiania 1901.

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II.

The Freshwater Algæ of East Greenland

by

E. Larsen.

1904.

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The material treated in this paper falls in two parts. One part containing about 60 glasses with Chlorophyceae was gathered by C. Kruuse and N. Hartz who were members of the expedition to East Greenland, set on foot by the Carlsberg Fund in 1898—1900.

The other part containing about 25 glasses with Chlorophyceae was gathered in 1899 and 1902 by C. Kruuse in the district of Angmagsalik. They were all preserved in alcohol.

Of former works treating the Chlorophyceae of East Greenland three are known to me: Boldt II, Boldt III and Börgesen I (see List of writings).

In Boldt II 44 Desmidiaceae are stated, besides 4 Chlorophyceae in the little note of Boldt III. In Börgesen I a little more than 100 Chlorophyceae are stated.

In the above mentioned material I have found 125 Chlorophyceae of which 47 hitherto unknown from East Greenland.

The following genera are not before mentioned from East Greenland: *Crucigenia, Polyedrium, Coelastrum, Hormospora, Aphanochæte, Ophiocytium.*

The complete number of Chlorophyceae presently known from East Greenland is 188, of which 150 Desmidiaceae.

The following list includes the species found by me, all species formerly known and with certainty determined, besides all their respective habitats.

As to the species found by Boldt and Börgesen no account is given of varieties nor forms, but only of the species.

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With regard to the limit between the Arctic and more southern flora of Desmidiaceae I only have to confirm what is stated by Börgesen (l. c. p. 4), still I have found *Euastrum oblongum* as far north as in Jameson Land.

I have not met with *Cladophora*, but with *Pediastrum* right up to Sabine Ö.

The dimensions are always in μ, where no other statement is given.

Li = Lat. Isthm.

The figures have all been drawn by means of a drawing prism (Seibert's microscope Objectiv V, Ocular I).

I am indebted to Dr. Börgesen for his valuable help; I also have to thank Miss E. Hallas for having determined the species of *Oedogonium* and *Bulbochæte*.

Copenhagen, Botanical Museum, July 1904.

List of habitats.

Kap Dan	65° 31′	Liverpool Kyst in Hurry Inlet	70° 50′
Tasiusak	65° 37′	Jameson Land Nordost-bugt	71° 10′
Kordlortok	65° 40′	Fleming Inlet	71° 38′
Amaka	65° 40′	Canning Land about	71° 40′
Tunok	65° 52′	Kap Seaforth	71° 49′
Stenö	66° 2′	Forsblads Fjord	72° 30′
Falkefjæld	66° 4′	Kap Borlase Warren	74° 1′
Kingorsuak	66° 5′	Sabine Ö	74° 30′
Kap Warming about	67° 1′		
Kap Dalton	69° 25′		
Dunholm	69° 55′		

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List of writings.

Boldt I = Boldt, R.: Bidrag til kännedomen om Sibiriens Chlorophyllacéer. (Öfvers. af K. Svenska Vet. Akad. Handl. Stockh. 1885.)

Boldt II = Boldt, R.: Desmidiéer från Grönland. (Bih. till K. Sv. Vet. Akad. Handl. 1888.)

Boldt III = Boldt, R.: Några Söttvattensalger från Grönland. (Botaniska Notiser 1893.)

Borge I = Borge, O.: Bidrag till Sibiriens Chlorophycéflora. (Bih. till K. Sv. Vet. Akad. Handl. 1891.)

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Delponte I = Delponte, J. B.: Specimen Desmidiarum Subalpinarum. Augustæ Taurinorum 1873.

Hazen I = Hazen, T. E.: The Ulothricaceae and Chætophoraceae of the United States. (Mem. of the Torrey bot. Club. Vol. XI, 1902.)

Hirn I = Hirn, K.: Zur Kenntnis der Desmidiaceen Finnlands. (Acta Soc. pro Fauna et Flora Fennica 25, Helsingfors 1903.)

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Jessen I = Jessen C.: Prasiolæ generis Algarum Monographia. Kiliæ 1848.

Lagerheim I = Lagerheim, G. v.: Studien über die Gattungen Conferva und Microspora. (Flora 1889.)

Lundell I = Lundell, P. M.: De Desmidiaceis quæ in Suecia inventæ sunt. Observationes criticæ. Upsaliæ 1871.

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Nordstedt II = Nordstedt, O.: Bidrag till kännedomen om sydligare Norges Desmidieer. Lund 1873.

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Nordstedt III = Nordstedt, O.: Desmidieae arctoæ. (Öfvers. af K. Sv. Vet. Akad. Handl. 1875.)

Nordstedt IV = Nordstedt, O.: Desmidieer samlade af Sv. Berggren under Nordenskiöldska expeditionen till Grönland 1870. (Öfvers. af K. Sv. Vet. Akad. Handl. 1885.)

Raciborski I = Raciborski: Monogr. Pediastr. (Mem. ac. imp. des sciences de Cracovie. 1889.)

Ralfs I = Ralfs, J.: The British Desmidieae. London 1848.

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Toni de I = Toni, J. B. de: Sylloge Algarum Vol. I. Patavii 1889.

Wille I = Wille, N.: Ferskvandsalger fra Novaja Semlja. (Öfvers. af K. Sv. Vet. Akad. Handl. 1879.)

Wille II = Wille, N.: Algologische Mittheilungen. (Pringsh. Jahrb. XVIII.)

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A. Chlorophyceae.

I. Conjugatae.

Desmidiaceae.

Arthrodesmus Ehrb.

1. **A. convergens** Ehrb.

Sim. Fig. Borge III, Tab. III, fig. 35. Lo 41, La sine acul. 46, Li 10.

Falkefjæld.

2. **A. incus** Hass.

Ralfs I, Tab. XX, fig. 4 f. Lo 17—19,5, La 14,8—15,6, Li 6,5—7,8.

Amaka, Liverpool Kyst in Hurry Inlet.
Börgesen I: Hekla Havn. Boldt II: Tasiusak.

3. **A. octocornis** Ehrb.

Börgesen I: Hekla Havn.

Closterium Nitzsch.

1. **C. acutum** Bréb.

Ralfs I: Tab. XXX, fig. 5 c. Lo 136—140, La 10.

Kordlortok, Liverpool Kyst in Hurry Inlet.
Börgesen I: Hekla Havn.

2. **C. cornu** Ehrb.

Ralfs I: Tab. XXX, fig. 6. Lo 84,5—106, La 10—11,7.

Jameson Land, Forblads Fjord.

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3. **C. Dianæ** Ehrb.

Ralfs I: Tab. XXVIII, fig. 5. Lo 107,9—125, La 10,4—15,6.
Amaka, Liverpool Kyst, Jameson Land, Kap Seaforth.
Börgesen I: Hekla Havn.

4. **C. intermedium** Ralfs.

Ralfs I: Tab. XXIX, fig. 3. Lo 220, La 32.
Kordlortok, Amaka, Jameson Land.
Börgesen I: Hekla Havn.

5. **C. Jenneri** Ralfs.

Wille I: pag. 60, Tab. XIV, fig. 83. Lo 66,3—100, La 10—12,2.
Amaka, Kap Dalton, Jameson Land.
Börgesen I: Hekla Havn.

6. **C. juncidum** Ralfs.

Börgesen I: Hekla Havn.

7. **C. Kützingii** Bréb.

Börgesen I: Röde Ö.

8. **C. parvulum** Näg.

Wille I: pag. 60, Tab. XIV. fig. 84. Lo 88,4, La 12.
Fleming Inlet.
Boldt II: Tasiusak.

9. **C. rostratum** Ehrb.

Ralfs I: Tab. XXX, fig. 3. Lo 342, La 22,3.
Amaka. Boldt II: Tasiusak.

10. **C. striolatum** Ehrb.

Ralfs I: Tab. XXIX, fig. 2. Lo 262—300, La 23,4—26,6.
Amaka, Liverpool Kyst in Hurry Inlet.
Börgesen I: Hekla Havn. Boldt II: Tasiusak.

Cosmarium Ralfs.

1. **C. anceps** Lund.

Lundell I: pag. 48, Tab. III, fig. 4. Lo 28, La 15, Li 10,5
Jameson Land.
Börgesen I: Röde Ö.

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2. **C. annulatum** De. By.

Börgesen I: Hekla Havn. Boldt II, Tasiusak.

3. **C. arctoum** Nordst.

Börgesen I: Hekla Havn.

4. **C. bioculatum** Bréb.

Ralfs I: Tab. XV, fig. 5. Lo 19,5, La 16,9, Li 5.

Kap Borlase Warren, Sabine Ö.

Börgesen I: Röde Ö, Hekla Havn. Boldt II: Tasiusak.

5. **C. biretum** Bréb.

Ralfs I: Tab. XVI, fig. 5. Lo 47, La 42, Li 17.

Kordlortok, Amaka, Sabine Ö.

6. **C. Blyttii** Wille.

Börgesen I: Hekla Havn.

7. **C. Botrytis** Menegh.

Delponte I: Tab. VIII, fig. 31—32. Lo 50—65, La 42—51, Li 14—18.

Kordlortok, Amaka, Tunok, Falkefjæld, Kap Dalton, Liverpool Kyst, Jameson Land, Fleming Inlet, Kap Seaforth, Kap Borlase Warren.

Börgesen I: Hekla Havn, Danmarks Ö. Boldt II: Tasiusak.

forma: **Boldtii.**

Boldt II: pag. 29, forma d. Lo 45,5, La 41, Li 13.

Falkefjæld.

8. **C. caelatum** Ralfs.

Ralf I: Tab. XVII, fig. 1 c. Lo 46, La 36, Li 14,3.

Kap Dalton.

9. **C. capitulum** Roy & Biss.

Börgesen I: Hekla Havn.

10. **C. connatum** Bréb.

Ralfs I: Tab. XVII, fig. 10. Lo 85, La 55,9.

Jameson Land.

Börgesen I: Hekla Havn.

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11. **C. conspersum** Ralfs.

Ralfs I: Tab. XVI, fig. 4. Lo 84,5—110, La 65—80, Li 19,5—26,6.

Jameson Land, Kap Borlase Warren.
Börgesen I: Hekla Havn, Röde Ö.

12. **C. costatum** Nordst.

Nordstedt III: pag. 25, Tab. VII, fig. 17. Lo 39, La 34, Li 15.
Kap Dalton.
Börgesen I: Hekla Havn. Boldt II: Tasiusak.

13. **C. crenatum** Ralfs.

Börgesen I: Hekla Havn. Boldt II: Tasiusak.

14. **C. cucumis** Ralfs.

Nordstedt III: Tab. VII, fig. 28. Lo 104, La 65, Li 39.
Amaka. Börgesen I: Hekla Havn.

15. **C. cucurbita** Bréb.

Sim. Fig. Klebs Desm. Ostpreuss. Tab. III, fig. 8. Lo 50, La 24,7.
Kap Warming.

16. **C. cyclicum** Lund. var. **arcticum** Nordst.

Nordstedt I: pag. 31, Tab. VI, fig. 13. Lo 45,5—65, La 42—65, Li 12—19,5.

Amaka, Falkefjæld, Kingorsuak, Kap Dalton, Liverpool Kyst in Hurry Inlet, Sabine Ö.
Börgesen I: Hekla Havn.

17. **C. Debaryi** Archer.

Börgesen I: Hekla Havn.

18. **C. excavatum** Nordst.

Börgesen I: Hekla Havn.

19. **C. globosum** Bulnh.

Börgesen I: p. 21, Tab. I, fig. 15. Lo 13—16, La 9—12, Li 8—9.

Jameson Land, Sabine Ö.
Börgesen I: Hekla Havn.

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forma: **major** Wille.

Wille I: pag. 45, Tab. XIII, fig. 42. Lo 26—28, La 19,5—21, Li 17—19.

Jameson Land.

20. **C. granatum** Bréb.

Ralfs I: Tab. XXXII, fig. 6. Lo 30, La 22, Li 6,5.

Kordlortok, Amaka.

Börgesen I: Hekla Havn, Danmarks Ö. Boldt II: Tasiusak.

21. **C. hexalobum** Nordst.

Nordstedt I: pag. 33, Tab. VII, fig. 16. Lo 52, La 37,7, Li 20.

Kap Dalton, Liverpool Kyst in Hurry Inlet.

Börgesen I: Hekla Havn.

22. **C. hexastichum** Lund.

Lundell I: pag. 33, Tab. III, fig. 13 a. Lo 51, La 39, Li 17—18.

Amaka.

Boldt II: Tasiusak.

As to the granulation it agrees with the form mentioned by Nordstedt IV, p. 9.

23. **C. Holmiense** Lund.

Nordstedt I: pag. 28, Tab. VI, fig. 5. Lo 66, La 32,5, Li 18.

Kingorsuak, Kap Dalton, Liverpool Kyst in Hurry Inlet, Jameson Land, Kap Borlase Warren, Sabine Ö.

Börgesen I: Hekla Havn, Röde Ö, Hold with Hope.

24. **C. homalodermum** Nordst.

Nordstedt III, pag. 18, Tab. VI, fig. 4. Lo 53,3—57, La 43—44, Li 16—18.

Kap Dalton, Liverpool Kyst in Hurry Inlet, Jameson Land Nordostbugt.

25. **C. Kirchneri** Börgs.

Börgesen I: Hekla Havn, Danmarks Ö.

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26. **C. læve** Rab.

Nordstedt: Desm. ital. (Öfvers. K. Vet. Akad. Förh. 1876), pag. 29, Tab. 12, fig. 4. Lo 26, La 15,6, Li 4.

Falkefjæld.

The specimens found by me fully agree with Nordstedt's figure (l. c.). The species has been found by Borge in North Russia (Borge III, p. 26).

27. **C. margaritiferum** Menegh.

Ralfs I: Tab. XVI, fig. 2. Lo 35—57,2, La 28—52, Li 14—15,6.

Kordlortok, Amaka, Falkefjæld, Jameson Land, Sabine Ö.

Börgesen I: Hekla Havn.

28. **C. Meneghinii** Bréb.

Ralfs I: Tab. XV, fig. 6. Lo 19,5—26, La 17, Li 7—9.

Kordlortok, Amaka, Tunok, Kap Dalton, Jameson Land, Kap Borlase Warren, Sabine Ö.

Börgesen I: Hekla Havn, Röde Ö.

29. **C. microsphinctum** Nordst.

Börgesen I: pag. 16, Tab. I, fig. 6. Lo 40—44, La 29—31, Li 15—18.

Kap Dalton, Sabine Ö.

Börgesen I: Hekla Havn.

forma: **parvulum** Wille.

Wille I: pag. 38, Tab. XII, fig. 22. Lo 32,5, La 19,5, Li 6.

Jameson Land.

30. **C. nasutum** Nordst.

Nordstedt I: pag. 34, Tab. VII, fig. 17. Lo 37, La 30, Li 12.

Kap Dalton, Jameson Land.

forma: **granulata** Nordst.

Wille I: pag. 42, Tab. XII, fig. 30. Lo 41—48, La 31—36,4, Li 11,7—17.

Kordlortok, Kap Dalton, Liverpool Kyst in Hurry Inlet.

Börgesen I: Hekla Havn.

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31. **C. Nathorstii** Boldt.

Boldt II: Tasiusak.

32. **C. ochthodes** Nordst.

Nordstedt III: pag. 17, Tab. VI, fig. 3. Lo 78, La 57, Li 37.

Kordlortok, Falkefjæld, Kap Dalton, Fleming Inlet, Jameson Land, Kap Borlase Warren, Sabine Ö.

Börgesen I: Hekla Havn. Boldt II: Tasiusak.

33. **C. orbiculatum** Ralfs.

Klebs: Desm. Ostpreuss. 1879, Tab. III, fig. 78—79. Lo 29—31, La 20—24, Li 9.

Falkefjæld, Kap Borlase Warren.

34. **C. perforatum** Lund.

Boldt II: Tasiusak.

35. **C. Phaseolus** Bréb.

forma: **minor.**

Boldt II: pag. 15. Lo 21,5, La 19, Li 7.

Amaka.

var. **elevata** Nordst.

Nordstedt II: pag. 17, fig. 5. Lo 28,6, La 27,3, Li 10.

Liverpool Kyst in Hurry Inlet.

Börgesen I: Hekla Havn. Boldt II: Tasiusak.

36. **C. Portianum** Archer.

Fig. nob. 1. Lo 36—39, La 26—27, Li 11.

Kordlortok, Amaka, Falkefjæld, Jameson Land.

Börgesen I: Hekla Havn.

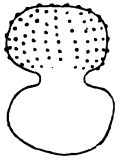

Fig. 1. *Cosmarium Portianum* Cellula a fronte.

37. **C. profractum** Archer.

Hirn I: pag. 11, Tab. I, fig. 10. Lo 40, La 38, Li 8.

Amaka.

38. **C. protumidum** Nordst. *β.* **triquetrum** Nordst.

Nordstedt I: pag. 35, Tab. VII, fig. 19. Lo 38—40, La 30.

Kap Dalton, Jameson Land, Kap Borlase Warren, Sabine Ö.

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39. **C. pseudoprotuberans** Kirchner.

Börgesen I: pag. 18, Tab. I, fig. 12. Lo 37, La 29, Li 10.

Amaka.

Börgesen I: Hekla Havn.

40. **C. pulcherrimum** Nordst.

Börgesen I: Hekla Havn.

41. **C. punctulatum** Bréb.

Klebs: Desm. Ostpreuss. pag. 37, Tab. III, fig. 50—51, Lo 27—31, La 21—29, Li 8—10.

Amaka, Stenö, Falkefjæld, Kap Dalton, Jameson Land, Fleming Inlet, Kap Borlase Warren, Sabine Ö.

Börgesen I: Hekla Havn.

42. **C. pusillum** Bréb.

Boldt II: Tasiusak.

43. **C. quadratum** Ralfs.

Wille I: pag. 37, Tab. XII, fig. 20. Lo 49—57, La 27—33, Li 15—22.

Kordlortok, Amaka, Falkefjæld, Kap Dalton, Liverpool Kyst, Jameson Land, Kap Borlase Warren, Sabine Ö.

forma: **major** Wille.

Wille l. c., Tab. XII, fig. 21. Lo 65, La 33,8, Li 20,8.

Liverpool Kyst in Hurry Inlet.

Börgesen I: Hekla Havn, Röde Ö.

Boldt II: Tasiusak.

44. **C. reniforme** Archer.

Börgesen I: Hekla Havn.

45. **C. scenedesmus** Delp.

Börgesen I: Hekla Havn, Danmarks Ö.

46. **C. speciosum** Lund.

var. **biforme** Nordst.

Nordstedt I: pag. 30, Tab. VI, fig. 11. Lo 62, La 50.

Sabine Ö.

Börgesen I: Röde Ö. Boldt II: Tasiusak.

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var. **simplex** Nordst.

Nordstedt l. c., Tab. VI, fig. 12. Lo 45, La 30, Li 19.

Kingorsuak, Kap Warming, Kap Dalton, Liverpool Kyst in Hurry Inlet, Jameson Land, Kap Borlase Warren, Sabine Ö.

Börgesen I: Hekla Havn.

47. **C. spetsbergense** Nordst.

Nordstedt I: pag. 27, Tab. VI, fig. 3. Lo 61, La 32,5, Li 19,5.

Liverpool Kyst in Hurry Inlet.

48. **C. striatum** Boldt.

Boldt I: pag. 104, Tab. V, fig. 9. Lo 15, La 14, Li 5.

Kordlortok, Amaka, Jameson Land.

Boldt II: Tasiusak.

49. **C. subcostatum** Nordst.

Börgesen I: Hekla Havn.

50. **C. subcrenatum** Hantzsch.

Nordstedt III, pag. 21, Tab. VI, fig. 10—11. Lo 23—33, La 20,8—27, Li 8—12.

Kordlortok, Amaka, Kap Dalton, Jameson Land, Sabine Ö.

Börgesen I: Hekla Havn. Boldt II: Tasiusak.

51. **C. sublobatum** Archer.

Börgesen I: Hekla Havn.

52. **C. subspeciosum** Nordst.

Börgesen I: Hekla Havn.

53. **C. subtumidum** Nordst.

Wittr. et Nordst.: Alg. exsic. Nr. 172. Lo = La = 27—28, Li 7,5.

Kordlortok, Amaka.

54. **C. tetraopthalmum** Kütz.

Delponte I: Tab. IX, fig. 1—4. Lo 98—110, La 72—83, Li 20—27.

Kordlortok, Amaka, Falkefjæld.

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55. **C. tinctum** Ralfs.

Börgesen I: Hekla Havn.

56. **C. Turpinii** Bréb.

Börgesen I, pag. 13, Tab. I, fig. 7. Lo 65, La 59, Li 16.

Kordlortok, Amaka, Falkefjæld, Kap Dalton, Kap Seaforth, Sabine Ö.

Börgesen I: Hekla Havn. Boldt II: Tasiusak.

57. **C. undulatum** Corda.

Ralfs I: Tab. XV, fig. 8. Lo 50—52, La 35—37,7, Li 14—16.

Kordlortok, Amaka.

Börgesen I: Hekla Havn.

58. **C. venustum** Archer.

Börgesen I: pag. 17, Tab. I, fig. 10. Lo 42, La 31,5, Li 9.

Kordlortok, Amaka.

Börgesen I: Hekla Havn, Darmarks Ö. Boldt II: Tasiusak.

Cylindrocystis De By.

C. Brebissonii Menegh.

Lo 26, La 13.

Kingorsuak, Kap Dalton.

Börgesen I: Gaasefjord.

Desmidium Ralfs.

D. Swartzii Ag.

Ralfs I: Tab. IV. Lo 19,5, La 44, Li 35.

Kordlortok, Amaka.

Börgesen I: Hekla Havn.

Euastrum Ralfs.

1. **E. ansatum** Ralfs.

Ralfs I: Tab. XIV, fig. 2. Lo 62, La 36, Li 9.

Kordlortok, Amaka.

Börgesen I: Hekla Havn.

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2. **E. binale** Ralfs.

Ralfs I: Tab. XIV, fig. 8. Lo 20—22, La 13—16.

Kordlortok, Amaka, Kap Dalton, Liverpool Kyst in Hurry Inlet, Jameson Land, Sabine Ö.

Börgesen I: Danmarks Ö, Gaasefjord, Hekla Havn. Boldt II: Tasiusak.

3. **E. crassicolle** Lund.

Lundell I: pag. 23, Tab. II, fig. 8. Lo 27, La 14, Li 7.

Kap Dalton, Jameson Land, Kap Borlase Warren.

Börgesen I: Hekla Havn. Boldt II: Tasiusak.

4. **E. cuneatum** Jenner.

Börgesen I: Hekla Havn. Boldt II: Tasiusak.

5. **E. denticulatum** Gay.

Börgesen I: Hekla Havn.

6. **E. didelta** Ralfs.

Ralfs I: Tab. XIV, fig. 1. Lo 102, La 53, Li 14.

Kordlortok, Amaka.

7. **E. elegans** Kütz.

Ralfs I: Tab. XIV, fig. 7. Lo 45,5, La 28,6, Li 9.

Kordlortok, Amaka, Falkefjæld, Liverpool Kyst in Hurry Inlet, Jameson Land, Fleming Inlet, Kap Borlase Warren, Sabine Ö.

Börgesen I: Hekla Havn.

var. **bidentata** Näg.

fere sim. Boldt II: Tab. I, fig. 10 (var. *speciosum*). Lo 49,4, La 32,5, Li 7.

Kordlortok, Amaka, Falkefjæld, Jameson Land.

Börgesen I: Hekla Havn. Boldt II: Tasiusak.

8. **E. gemmatum** Bréb.

Boldt II: pag. 6, Tab. I, fig. 5. Lo 46,8, La 35, Li 9.

Amaka.

Boldt II: Tasiusak.

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9. **E. oblongum** Ralfs.

Ralfs I: Tab. XII a, b. Lo 136,8—152, La 68,4—72, Li 19—22,8.

Kordlortok, Amaka, Falkefjæld, Jameson Land.
Boldt II: Tasiusak.

10. **E. pectinatum** Bréb.

Ralfs I: Tab. XIV, fig. 5. Lo 64, La 44, Li 10.
Kordlortok, Amaka.

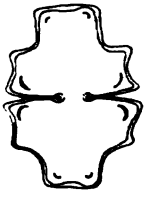


Fig. 2. *Euastrum pectinatum* Bréb. forma. Cellula a fronte.

forma: The terminal lobe not dilated as in Ralf's figure (Ralfs I: Tab. XIV, fig. 5) cfr. fig. nob. 2.

Lo 63,7, La 46,2, Li 9,8.
Kordlortok, Amaka.

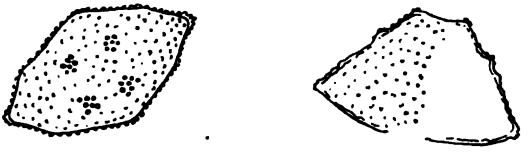
11. **E. verrucosum** Ehrb.

Boldt II: Tasiusak.

β. **rhomboideum** Lundell. forma: **groenlandica** nob. cfr. Fig. nob. 3.

Seen from above the cell is relatively much broader than the cell observed by Lundell. Cfr. Lundell I, Tab. I, fig. 8. Lo 120, La 104.

Kordlortok, Amaka, Falkefjæld.



a *b*

Fig. 3. *Euastrum verrucosum* Ehrb. *β. rhomboideum* Lund. forma *groenlandica* nob. *a*; Cellula a vertice: *b*: Semicellula a fronte.

Gonatozygon De By.

G. asperum Bréb.

Ralfs I: Tab. XXVI, fig. 6. Lo 260, La 12.
Jameson Land, Fleming Inlet.

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C. Ralfsii De By.

Börgesen I: Hekla Havn, Röde Ö, Gaasefjord.

Gymnozyga Ehrb.

G. moniliformis Ehrb.

La 16.

Sabine Ö.

Börgesen I: Hekla Havn.

Hyalotheca Kütz.

H. dissiliens Bréb.

Ralfs I: Tab. I, fig 1. La 26.

Falkefjæld, Liverpool Kyst in Hurry Inlet, Sabine Ö.

Börgesen I: Hekla Havn. Boldt II: Tasiusak.

var **bidentatula** Nordst.

Nordstedt II, pag. 48, Tab. I, fig. 22. La 20.

Jameson Land.

Börgesen I: Hekla Havn.

Mesotænium Näg.

M. Braunii De By.

Börgesen I: Gaasefjord.

Micrasterias Ag.

M. americana Ralfs.

Boldt II: pag 5, Tab. I, fig. 1. Lo 140, La 110. Li 30.

Kordlortok, Amaka.

Boldt II: Tasiusak.

M. denticulata Bréb.

Boldt II: Tasiusak.

Penium De By.

1. **P. closterioides** Ralfs.

Börgesen I: Hekla Havn. Boldt II; Tasiusak.

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2. **P. curtum** Bréb.

forma: **major** Wille.

Wille I: pag. 56, Tab. XIV, fig. 73. Lo 40—42, La 20,8—22.

Kap Dalton, Jameson Land, Kap Borlase Warren, Sabine Ö.

forma: **minor** Wille.

Wille l. c., Tab. XIV, fig. 74. Lo 30, La 14.

Kap Dalton, Jameson Land, Kap Borlase Warren, Sabine Ö. Börgesen I: Hekla Havn.

3. **P. cylindrus** Bréb.

Delponte I: Tab. XV, fig. 30. Lo 50, La 14.

Jameson Land.

4. **P. lamellosum** Bréb.

Delponte I: Tab. XV, fig. 13. Lo 117—170, La 36,4—39.

Kordlortok, Amaka, Falkefjæld.

5. **P. margaritaceum** Bréb.

Ralfs I: Tab. XXV, fig. 1. Lo 83—120, La 21—22.

Kordlortok, Amaka, Kap Dalton, Jameson Land, Sabine Ö.

6. **P. polymorphum** Perty.

Lundell I: pag. 86, Tab. V, fig. 10. Lo 58,5, La 27,8.

Kap Dalton.

7. **P. Regelianum** Wille.

Börgesen I: Hold with Hope.

Pleurotænium Lund.

P. trabecula Näg.

Börgesen I: Danmarks Ö. Boldt II: Tasiusak.

β. **crassum** Wittrock.

Wittrock: Gotl. och Ölands Sötvatnsalg. 1872. pag. 62, Tab. IV, fig. 17. Lo 494—532, La 38—41,8.

Kordlortok, Amaka. Tunok, Falkefjæld.

Börgesen I: Hekla Havn, Röde Ö.

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Sphærozosma Arch.

S. excavatum Ralfs.

Ralfs I: Tab. VI, fig. 2. La 11,7, Li 5.

Falkefjæld.

Börgesen I: Hekla Havn.

forma: Boldt II: pag. 42, Tab. II, fig. 52. Lo 9, La 10, Li 5.

Liverpool Kyst, Jameson Land.

Boldt II: Tasiusak.

Staurastrum Ralfs.

1. **S. aculeatum** Menegh.

β. **ornatum** Nordst.

Nordstedt I: pag. 40, Tab. VII, fig. 27. Lo 45, La 34, Li 15.

Kap Dalton.

Börgesen I: Hekla Havn.

forma: **spinosissima tetragona** Wille.

Wille I: pag. 54, Tab. XIII, fig. 67. Lo 39—40, Li 14.

Kap Dalton, Liverpool Kyst in Hurry Inlet.

Börgesen I: Hekla Havn.

forma: **simplex** Boldt II, pag. 38, Tab. II, fig. 49. Lo 37, La 39, Li 15.

Kap Dalton.

Börgesen I: Hekla Havn.

forma: **torta** Börgesen I: pag. 28, Tab. II, fig. 26. Lo 32, Li 11.

Liverpool Kyst in Hurry Inlet.

Börgesen I: Hekla Havn.

2. **S. alternans** Bréb.

Ralfs I: Tab. XXI, fig. 7. Lo 31,3, La 29.

Kap Dalton, Sabine Ö.

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3. **S. Bieneanum** Rab.

forma: **Spetsbergensis** Nordst.

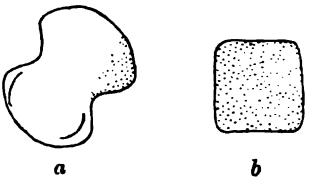
Nordstedt III: pag. 33, Tab. VIII, fig. 35. Lo 36—37, La 36, Li 10—11.

Kap Borlase Warren.

Börgesen I: Hekla Havn.

forma: **groenlandica** nob. is possibly a form of S. Kjellmani Wille (Wille I, p. 50) but it is not granulated, only slightly pored; it is moreover somewhat smaller. Lo 35,5, La 23,4, Li 15,6. Fig. 4.

Kordlortok, Amaka.



a *b*

Fig. 4.

Staurastrum Bieneanum Rab. forma *groenlandica* nob.

a: Cellula a fronte.

b: Cellula a vertice.

4. **S. Brebissoni** Arch.

Cfr. Boldt II: pag. 33, Tab. II, fig. 45. Lo 57—71,5, La 33—54,6, Li 19,5—22.

Kordlortok, Amaka, Kap Dalton, Liverpool Kyst in Hurry Inlet, Jameson Land.

5. **S. brevispinum** Bréb.

Ralfs I: Tab. XXXIV, fig. 7.

forma: **minor** Rab. Lo 34, La 33, Li 10.

Liverpool Kyst in Hurry Inlet.

Börgesen I: Hekla Havn, Röde Ö.

6. **S. capitulum** Bréb.

β. **amoenum** Rab. forma: **Spetsbergense** Nordst.

Nordstedt I: pag. 39, Tab. VII, fig. 25. Lo 41,6, La 29,9, Li 15,6.

Kap Dalton.

7. **S. cuneatum** Boldt.

Boldt I: pag. 114, Tab. V, fig. 24. Lo 21,8, La 20, Li 7,8.

ordlortok.

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8. **S. cuspidatum** Bréb.

Ralfs I: Tab. XXI, fig. 1. Lo 40. La 26,6, Li 10,4.

Jameson Land.

Börgesen I: Hekla Havn, Danmarks Ö, Röde Ö.

9. **S. dejectum** Bréb.

Ralfs I: Tab XX, fig. 5. Lo 32, La 30.

Kordlortok, Amaka, Falkefjæld.

Börgesen I: Hekla Havn.

10. **S. Dickiei** Ralfs.

Börgesen I: Hekla Havn.

11. **S. furcigerum** Bréb.

Ralfs I: Tab. XXXIII, fig. 12. Lo sine procul. 38,4, Lo cum procul. 66,3, La cum procul. 58,5.

Amaka. Börgesen I: Hekla Havn, Röde Ö.

12. **S. hexacerum** Wittr.

forma: **4-gona** Boldt.

Boldt I: pag. 115, Tab. V, fig. 25. Lo 26, La 30, Li 8.

Kap Dalton.

forma: **alternans** Wille. Wille I: p. 53.

Jameson Land.

Börgesen I: Hekla Havn.

13. **S. insigne** Lund.

Börgesen I: Hekla Havn. Boldt II: Tasiusak.

14. **S. Kjellmani** Wille.

formæ: **tetragona et pentagona** Wille.

Wille I: pag. 50, Tab. XIII, fig. 52. Lo 45—48, La 34—37,7, Li 18—20.

Kap Dalton, Liverpool Kyst in Hurry Inlet, Sabine Ö.

forma: **trigona minor** Wille l. c. Tab. XIII, fig. 51. Lo 37, La 32,5, Li 14.

Kap Dalton.

Börgesen: Hekla Havn. Boldt II: Tasiusak.

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15. **S. lunatum** Ralfs.

forma: **groenlandica** Börges. Börgesen I: pag. 29, Tab. II, fig. 27. Lo 34, La 32, Li 12.

Liverpool Kyst in Hurry Inlet.
Börgesen I: Hekla Havn.

var. **triangularis** Börges. Börgesen l. c. Tab. II, fig. 28. Lo = La sine acul. = 32, Li 12.

Amaka, Kap Dalton.
Börgesen I: Hekla Havn.

16. **S. margaritiferum** Menegh.

Börgesen I: Hekla Havn. Boldt II: Tasiusak.

17. **S. meganolotum** Nordst.

Börgesen I: Hekla Havn. Boldt II: Tasiusak.

18. **S. Meriani** Reinsch.

Reinsch: Algenflora v. Franken pag. 160, Tab. 12, fig. 1. Lo 39, La 26, Li 15,6.

Jameson Land.

19. **S. minutissimum** Reinsch.

forma: **trigona minor** Wille. Wille I: pag. 52, Tab. XIII, fig. 60. Lo 18—20, La 17—19, Li 9—10.

Kap Dalton. Börgesen I: Hekla Havn.

20. **S. monticulosum** Bréb.

β. **bifarium** Nordst. Börgesen I: pag. 29, Tab. II, fig. 25. Lo 39, La 37.

Jameson Land. Börgesen I: Hekla Havn.

21. **S. muricatum** Bréb.

Cfr. *S. trapezicum* Boldt II: pag. 35, Tab. II, fig. 46. Lo 44—46,8, La 42—43, Li 19—19,5. 4-gona.

Kap Dalton.

22. **S. muticum** Bréb.

Börgesen I: Hekla Havn.

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23. **S. orbiculare** Ralfs.

Börgesen I: Hekla Havn.

24. **S. pachyrhynchum** Nordst.

forma: **3-** et **4-gona**. Nordstedt III: pag. 32, Tab. VIII, fig. 34. Lo 28—34, La 22—26, Li 11—12.

Amaka, Kap Dalton, Jameson Land, Sabine Ö.

Börgesen I: Hekla Havn, Röde Ö.

25. **S. papillosum** Kirchn.

Börgesen I: Röde Ö.

26. **S. pilosum** Archer.

Börgesen I: Hekla Havn, Danmarks Ö.

27. **S. polymorphum** Bréb.

Ralfs I: Tab. XXII, fig. 9. 6-gona. Lo 38, La 39, Li 15.

Kordlortok.

Börgesen I: Hekla Havn. Boldt II: Tasiusak.

28. **S. proboscideum** Archer.

var. **altum** Boldt. Boldt I, pag. 117, Tab VI, fig. 34. Lo = La = 70, Li 16.

Liverpool Kyst.

29. **S. punctulatum** Bréb.

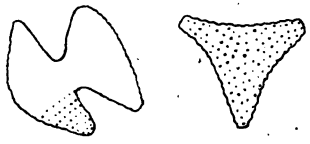
Ralfs I: Tab. XXII, fig. 1. Lo 28—29, La 29—29,9, Li 9.

Jameson Land, Fleming Inlet.

30. **S. pygmæum** Bréb.

var. **obtusum** Wille. Wille I: pag. 51, Tab. XIII, fig. 56.

forma: It resembles Wille's figure; but the corners are not denticulated. Lo 30,5—32,5, La 31,8—33,8, Li 8—10 (Fig. 5).



a *b*

Fig. 5.

Staurastrum pygmæum Bréb. var *obtusum* Wille. forma.

a: Cellula a fronte.

b: Cellula a vertice.

Amaka, Tunok, Kap Borlase Warren.

Börgesen I: Hekla Havn. Boldt II: Tasiusak.

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31. **S. saxonicum** Bulnh.

Börgesen I: Hekla Havn.

32. **S. scabrum** Bréb.

Boldt II: Tasiusak.

33. **S. Sebaldi** Reinsch.

forma: **groenlandica** Börgesen I: pag. 30, Tab. II, fig. 31. Lo 65, La 72, Li 16.

Falkefjæld.

Börgesen I: Hekla Havn, Danmarks Ö.

34. **S. sibiricum** Borge.

Börgesen I: Hekla Havn.

35. **S. sp.** Nordst.

Nordstedt III: pag. 33, Tab. VIII, fig. 37. Lo = La = 10, Li 5.

Kap Dalton.

36. **S. spongiosum** Bréb.

Boldt I: pag. 118, Tab. VI, fig. 31, forma 3-gona. La 40, Lo 45.

Kap Dalton.

Börgesen I: Hekla Havn.

37. **S. subsphæricum** Nordst.

Nordstedt III: pag. 31, Tab. VIII, fig. 33. Lo 48, La 34, Li 20. forma 4-gona.

Kap Dalton.

38. **S. teliferum** Ralfs.

Delponte I: Tab. XI, fig. 1—4. Lo 36,4—39, La 31—32, Li 9—12.

Kordlortok, Amaka, Falkefjæld, Jameson Land.

Börgesen I: Hekla Havn, Danmarks Ö.

39. **S. tetracerum** Ralfs.

Börgesen I: Hekla Havn.

40. **S. vestitum** Ralfs.

Börgesen I: Danmarks Ö.

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Tetmemorus Ralfs.

T. lævis Ralfs.

β. **attenuatus** Wille. Wille I: pag. 58, Tab. XIV, fig. 77.
Lo 78—87,7, La 24—26, Li ?—24.
Amaka, Kap Dalton.
Boldt II: Tasiusak.

Xanthidium Ehrb.

1. **X. antilopæum** Kütz.

γ. **dimazum** Nordst. Nordstedt II: pag. 38, Tab. I, fig. 19.
Lo 50, La 47, Li 13. Lo spin. c. 13.
Falkefjæld.
Börgesen I: Hekla Havn.

2. **X. cristatum** Bréb.
Boldt II: Tasiusak.

3. **X. fasciculatum** Ehrb.
Delponte I: Tab. XIII, fig. 20. Lo 57, La sine acul. 60,8, Li 13, Lo acul. 16,9.
Falkefjæld.

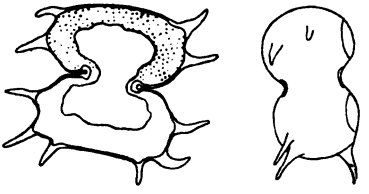

Fig. 6.
Xanthidium antilopæum Kütz.
a: Cellula a fronte. *b*: Cellula a latere.

With regard to the distinction between the species *antilopæum* and *fasciculatum* I shall refer to Börgesen's report (Börgesen I, p. 23); not even the number of spines is always constant; I have seen specimens with four pair of spines on one semicell, and with six on the other (Fig. 6).

Zygnemaceae.

Zygnema De By.

Z. Cyanosporum Cleve.
De Toni I: pag. 729. La veg. cell. 22 *μ*. Diam. Spor. 33,8.

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The spores were spherical or almost spherical, glabrous, and of a deep bluish black colour, or almost quite black. The spore is formed in the channel of conjugation.

Amaka.

Z. lejospermum De By.

Börgesen I: Hekla Havn.

Z. stellinum Ag.

Börgesen I: Hekla Havn.

Z. sp. Sterile Zygnemæ were found from almost all localities as far north as to Sabine Ö.

Spirogyra Link.

S. sp. Fructiferous Spirogyra were not at all found; Börgesen with some doubt mentions *S. insignis* Kg. (Börgesen I, p. 34) from Gaasefjord.

Mesocarpaceae.

Mougeotia Wittr.

Börgesen l. c. p. 35 with some doubt mentions *M. ovalis* Nordst. or *M. gelatinosa* Wittr. et Nordst., besides several sterile specimens. I did not find any fructiferous, but many sterile specimens from almost all localities.

II. Euchlorophyceae.

Palmellaceae.

Palmella Lyngb.

P. mucosa Kütz.

Börgesen I: Hekla Havn.

Tetraspora Link.

T. lubrica Ag.

Boldt III: Tasiusak.

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Gloeocystis Näg.

G. rupestris Rab.

Börgesen I: Danmarks Ö.

Volvocaceae.

Pandorina Pringsh.

P. morum Müll.

Falkefjæld, Jameson Land, Kap Borlase Warren,
Börgesen I: Hekla Havn.

Eudorina Ehrb.

E. elegans Ehrb.

Börgesen I: Hekla Havn.

Sphærella Sommerf.

S. nivalis Sommerf.

Börgesen I: Hekla Havn, Danmarks Ö, Hold with Hope.

Protococcaceae.

Oocystis Näg.

O. solitaria Wittr.

Chodat I, pag. 191. Lo 16,9, La 10, Lo Col. 32,5.
Jameson Land.
Börgesen I: Hekla Havn, Röde Ö. Boldt II: Tasiusak.

Raphidium Kütz.

R. fasciculatum Kütz. + γ. **radiatum.**

Cfr. Chodat I: pag. 197—98. Lo 40, La 1,5
Kordlortok, Amaka, Jameson Land, Kap Borlase Warren.
Börgesen I: Hekla Havn.

Crucigenia Morren.

C. rectangularis (A. Br.) Chodat.

Chodat I: p. 206. Lo 7,8, La 5,2.
Kordlortok.

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Scenedesmus Meyen.

1. **S. quadricauda** Bréb.

Chodat I: pag. 213. Lo cell. 18, La 6,5.

Tunok.
Börgesen I: Röde Ö.

2. **S. bijugatus** Kütz.

Chodat I: pag. 212 «**seriatus**». La 4—6.

Kordlortok, Amaka, Tunok, Jameson Land.
Börgesen I: Hekla Havn.

3. **S. denticulatus** Lagerh.

Börgesen I: Danmarks Ö.

Polyëdrium Näg.

1. **P. minutum** nov sp.

The cell has four arms narrowing off towards their apices. No spines. Lat. Cell. 19,5 μ. Lat. Brach. ad Bas. 4 μ. Fig. 7.

Kap Borlase Warren.

2. **P. angulosum** nov. sp.

The cell polygonous with roundish corners; in every corner two short spines. Diam. Cell. 18,5 μ. Fig. 8.

Kordlortok Amaka.

Fig. 7.

Fig 8.

Fig. 7.
Polyëdrium minutum sp. nov.
Fig. 8.
Polyëdrium angulosum sp. nov.

Pediastrum Meyen

1. **P. Boryanum** Menegh.

var. **granulatum** Kirchn.

Tunok, Falkefjæld.
Boldt III: Tasiusak.

var. **granulatum** forma **forcipatum.** Raciborski I: fig. 16: Falkefjæld.

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var. **longicorne** forma **granulata.** Raciborski I: fig. 13. La cell. 14,3, Lo cell. cum spin. 22, Lo spin. 10,4 Diam. Coenob. 117.

Kordlortok, Amaka, Falkefjæld, Kap Borlase Warren.

var. **longicorne** ? forma **ordinata** nob.

The granulations occuring in regular rows along the dissepiments. La cell. 26—30 μ, Long. spin. 10—11 μ. Fig. 9.

Jameson Land.

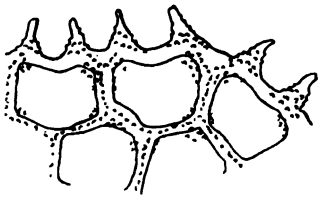

Fig. 9.
Pediastrum Boryanum Menegh. var. *longicorne* Rac. forma *ordinata* nob.
Fragment of Coenobium showing the granulation of the cell.

2. **P. rotula** A. Br.
Boldt III: Tasiusak.

3. **P. tricornutum** Borge.
Chodat I: pag. 230. Diam. cell. c. 8 μ.
Amaka, Sabine Ö.

Coelastrum Näg.

C. proboscideum Bohlin.
Senn I: Diam. Cell. 10—11 μ, Diam. Coenob. c. 35 μ.
Kordlortok, Amaka.

Ulothricaceae.

Ulothrix Kütz.

1. **U. subtilis** Kütz.
Chodat I: pag. 268. Hazen I: pag. 162, Tab. 21, fig. 11. La cell. 5,2.
Kap Dalton, Dunholm, Hurry Inlet, Sabine Ö.
Börgesen I: Hekla Havn.

2. **U. zonata** Kütz.
Börgesen I: Gaasefjord, Kap Stewart.

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3. **U. variabilis** Kütz.

Hazen I: pag. 152, Tab. 21, fig. 5—7. La cell. 6—7 μ.
Dunholm.

Hormospora Bréb.

H. minor Näg.

Chodat I: pag. 270. Lat. fil. 15 μ. Diam. cell. 6,5 μ.
Kap Borlase Warren.

Pleurococcaceae.

Pleurococcus Menegh.

P. vulgaris Menegh.

Börgesen I: Danmarks Ö, Röde Ö, Gaaseland, Hekla Havn.

Acanthococcus Lagerh.

A. hirtus Lagerh.

Börgesen I: Hekla Havn.

Chlorococcus Fries.

C. humicola Rab.?

Börgesen I: Kobberpynt, Danmarks Ö, Kap Stewart.

Chætophoraceae.

Aphanochæte A. Br.

A. repens A. Br.

Chodat I: pag. 329. Diam. cell. veg. 8 μ.
On *Oedogonium*, Amaka.

Schizogoniaceae.

Prasiola Ag.

P. Sauteri Menegh.

Imhäuser I: pag. 276.

The exterior agrees with the narrow specimens of Jessen's figure (Jessen I, Tab. I, fig. 4—5). The thallus attains a length

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of up to 32 mm. and a breadth of up to 2 mm. The diameter of the cell is 5—6,5 μ. Rhizoids from the basal part of the plant were found beautifully developed. Specimens in different

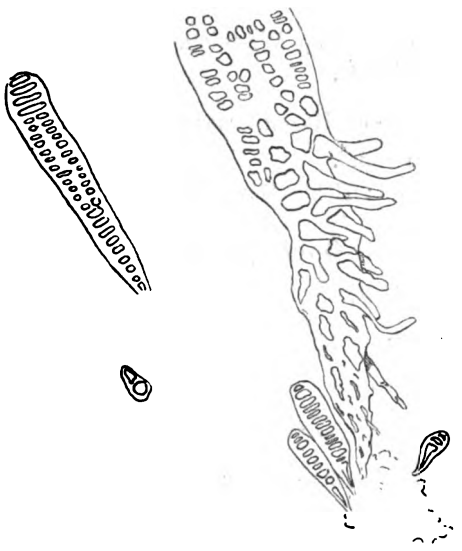

Fig. 10.

Prasiola Sauteri Menegh.

To the right: the basal part of a fully developed plant with rhizoids; at its base and to the left: young plants in different stages of development.

stages of development were belonging to the material (comp. Fig. 10) showing that the development is analogous to that of *P. stipitata*, as presumed by Imhäuser l. c.

Canning Land.

Schizogonium Kütz.

S. crispum Gay.

Stages of *Schizogonium* as well as of *Hormidium* were found in gatherings from Fleming Inlet and Kap Warming.

Börgesen I found the stage of *Schizogonium* at Röde Ö and Danmarks Ö.

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Confervaceae.

Tribonema.

T. bombycinum Derb. et Sol.

La cell. 6,5—8,5 μ.

Kap Dan, Stenö, Kap Warming, Kap Dalton, Jameson Land, Kap Seaforth, Sabine Ö.

forma: **tenue** Hazen. Hazen I: pag. 185. La cell. 4,5 μ.
Jameson Land.
Börgesen I: Hekla Havn, Gaaseland.

Ophiocytium Någ.

O. parvulum A. Br.

Lat. fil. 6,5 μ.

Falkefjæld.

Microsporaceae.

Microspora Lagerh.

1. **M. pachyderma** Wille.

Lagerheim I: pag. 208. Lat. cell. 13—14 μ.

Sabine Ö.
Börgesen I: Hekla Havn, Kap Stewart.

2. **M. stagnorum** Lagerh.

Lagerheim I: pag. 208. Wille II. Lat cell. 7—9.

Falkefjæld, Jameson Land, Sabine Ö.

3. **M. tumidula** Hazen.

Hazen I: p. 177, Tab. 24, fig. 8—11. La 7,8.

Kap Dan.

Oedogoniaceae.

Oedogonium Link.

1. **O. crispum** Wittr.

Kordlortok, Amaka.

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2. **O. capilleforme** forma: **De Baryanum** (Chmielevsky) Hirn.
Kordlortok, Amaka.

3. **O. grande** forma: **hortense** Wittr.
Kordlortok, Amaka.

Several sterile Oedogonia were moreover found from different localities. Cfr. Börgesen I: pag. 39.

Bulbochæte Ag.

1. **B. dispar** Wittr.
Kordlortok, Amaka.

2. **B. intermedia** De By.
Börgesen I: Hekla Havn.

3. **B. mirabilis** Wittr.
Kordlortok, Amaka.
With some doubt stated from Hekla Havn (Börgesen I).

4. **B. crassiuscula** Nordst.
Kordlortok, Amaka.

III. Siphoneae.

Vaucheriaceae.

Vaucheria De Cand.

1. **V. terrestris** Lyngb.
Börgesen I: Gaaseland.

2. **V. geminata** Walz.
With some doubt stated from Hekla Havn (Börgesen I).

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B. Phæophyceae.

Hydrureae.

Hydrurus Ag.

H. foetidus Kirch.

Hurry Inlet, Jameson Land.

Börgesen 1: Hekla Havn, Kap Stewart.

30—10—1904.

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III.

Fungi Groenlandiæ orientalis

in expeditionibus G. Amdrup 1898—1902

a **G. Amdrup** (G. A.), **N. Hartz** (N. H.) et **C. Kruuse** (C. K.) collecti.

Determ. **E. Rostrup.**

1904.

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Peronosporaceae.

1. **Peronospora Alsinearum** Casp.

Cerastium trigynum: Tasiusak (C. K.).

2. **Peronospora grisea** (Ung.) de Bary.

Veronica saxatilis: Tasiusak (C. K.).

Ustilaginaceae.

3. **Sphacelotheca Hydropiperis** (Schum.) de Bary.

Polygonum viviparum: Kap Borlase Warren, Hurry Inlet, Fame Ö, Kap Wandel, ad rivulum prope Angmagsalik, Kingorsuak (C. K.).

4. **Ustilago Caricis** (Pers.) Fuck.

Carex sp.: Kingua Hurry Inlet, Ikatek (C. K.). — *Carex rigida*: Amaga, Tasiusak (C. K.). — *Carex nardina*: Kordlortok, Tasiusak (C. K.). — *Elyna Bellardi*: Sarfakajik (C. K.).

5. **Ustilago vinosa** (Berk.) Tul.

Oxyria digyna: Eskimo Ö, Hurry Inlet, Kingak, Angmagsalik (C. K.).

6. **Tilletia arctica** Rostr.

Carex sp. Folia: Hurry Inlet (C. K.).

7. **Urocystis sorosporoides** Kke.

Thalictrum alpinum: Fleming Inlet (N. H.), Kap Dalton (C. K.).

Uredinaceae.

8. **Puccinia septentrionalis** Juel.

Polygonum viviparum: Kap Brown, Hurry Inlet, Turner Sund, Tasiusak, Kingorsuak (C. K.).

Thalictrum alpinum (Aecidium Sommerfeltii Joh.): Kakarsuak, Kingorsuak, Sarfakajik, Tasiusak (C. K.).

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9. **Puccinia variabilis** (Grev.) Plowr.

Taraxacum phymatocarpon: Hurry Inlet (C. K.). — *Taraxacum croceum*: Tunok, Tasiusak (C. K.).

10. **Micropuccinia Saxifragae** (Schlect.).

Saxifraga cernua: Kap Stewart (C. K.). — *Saxifraga rivularis*: Kap Brewster (C. K.).

11. **Micropuccinia Epilobii** (DC.).

Epilobium alsinefolium: Surok, Tunok (C. K.). — *Epilobium anagallidifolium*: Tasiusak (C. K.). — *Chamaenerium angustifolium*: Tasiusak (C. K.).

12. **Micropuccinia Blyttii** (de Toni).

Sedum Rhodiola: Kumarmiut (C. K.).

13. **Micropuccinia Cruciferarum** (Rud.).

Vesicaria arctica: Jamesons Land (C. K.). — *Cardamine bellidifolia*: Kap Greg (N. H.).

14. **Leptopuccinia Veronicarum** (DC.).

Veronica alpina: Hurry Inlet, Kap Warming, Tasiusak (C. K.).

15. **Trachyspora Alchimillae** (Pers.) Schroet.

Alchimilla vulgaris: Tunok, Kakasuak, Tasiusarsik (C. K.).

16. **Melampsora arctica** Rostr.

Salix arctica: Kap Borlase Warren, Hurry Inlet, Fame Ö, Kap Brown, Kap Dalton (C. K.).

Auriculariaceae.

17. **Pilacre bubonis** n. sp. Stromatibus gregariis, stipitato-capitatis, albidis, 5—6 mm. altis, 1—2 mm. crassis; capitulo disciformi-depresso, levi, fusco; sporis ellipsoideis, 1-guttulatis, hyalinis, longit. 5—6 μ, crassit. 4 μ. In pilulae rejectae strigum. Kap Dalton (N. H.).

Clavariaceae.

Sclerotia globoidea fusca, ad Typhulæ speciem ut videtur pertinentia, in caulibus Arabidis alpinæ, foliis Caricis rigidæ et foliis Poæ alpinæ lecta, ad Turner Sund (C. K.).

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Thelephoraceae.

18. **Exobasidium Warmingii** Rostr.

Saxifraga oppositifolia: Kap Dalton (N. H.).

19. **Exobasidium Vaccinii** Wor.

Vaccinium uliginosum: Kangerdluarsikajik, Hurry Inlet, Kingorsuak, Sarfakajik (C. K.). Sporæ quam vulgo majores, nempe 16—18 μ l., 8—9 μ t. — *Cassiope tetragona*: Hurry Inlet, Turner Sund, Kingorsuak (C. K.).

Polyporaceae.

20. **Boletus scaber** Fr.

Hurry Inlet Kingua, Liverpool Kyst (C. K.).

Agaricaceae.

21. **Russuliopsis laccata** (Scop.) Schroet.

Tasiusak (C. K.).

Obs. In collectionibus expeditionis **Agaricaceæ** variæ exsiccatæ, indeterminabiles e generibus *Russulæ*, *Pholiotæ*, *Inocybes*, *Clitocybes* et *Cortinarii* inventæ sunt.

Gasteromycetes.

22. **Lycoperdon gemmatum** Batsch.

Kap Seaforth, Tasiusak. Var. *minuta*: Kap Brown, Lilleö, Ikatek (C. K.).

23. **Lycoperdon favosum** (Rostkov.) Bonord.

Hurry Inlet, Kingua, Liverpool Kyst, Kap Dalton (C. K.).

24. **Lycoperdon uteriforme** Bull.

Angmagsalik (C. K.).

25. **Globaria Bovista** (L.) Schroet.

Tasiusak (C. K.).

26. **Globaria furfuracea** (Schaeff.) Schroet.

Ikerasausak (C. K.).

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Taphrinaceae.

27. **Taphrina carnea** Joh.

Betula nana: Huspynt (C. K.).

Erysiphaceae.

28. **Erysiphe graminis** DC.

Poa pratensis: Danmarks Ö (N. H.).

Sphaeriaceae.

29. **Asterella Chamaenerii** Rostr.

Chamaenerium latifolium: Hurry Inlet (C. K.).

30. **Laestadia rhytismoides** (Berk.) Sacc.

Dryas octopetala: Kap Dalton (N. H.).

31. **Coleroa Alchimillae** (Grev.) Wint.

Alchimilla vulgaris: Tasiusak (C. K.).

32. **Coleroa Oxyriae** Rostr.

Oxyria digyna: Adloe Kap Dan Öer $^{18}/_{1}$ 99.

33. **Sphaerella Tassiana** de Not.

Trisetum subspicatum: N. Aputitek (G. A.). — *Poa alpina*: Hurry Inlet, Kingorsuak (C. K.). — *Carex rigida*: Turner Sund (C. K.). — *Carex rariflora*: N. O. Bugt (N. H.).

34. **Sphaerella pusilla** Awd.

Carex rupestris: Turner Sund (C. K.).

35. **Sphaerella minor** Karst.

Chamaenerium latifolium: Hurry Inlet (C. K.).

36. **Sphaerella arthopyrenoides** Awd.

Papaver nudicaule: Kap Borlase Warren (C. K.), Forsbladfjord (N. H.).

37. **Sphaerella ootheca** Sacc.

Dryas integrifolia: Turner Sund (C. K.).

38. **Sphaerella Polygonorum** (Crié) Sacc.

Polygonum viviparum: Kingorsuak (C. K.).

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39. **Sphaerella Stellariacearum** (Rbh.) Karst.

Cerastium alpinum: Kap Dalton (C. K.). — *Cerastium trigynum*: Kap Irminger (G. A.).

40. **Sphaerella inconspicua** Schroet.

In pedunculis et foliis *Cassiopis tetragonæ*: Turner Snnd, Kingorsuak (C. K.).

41. **Sphaerella Cruciferarum** (Fr.) Sacc.

Draba nivalis: Sabine Ö (N. H.).

42. **Sphaerella pachyasca** Rostr.

Draba hirta: Hurry Inlet, Kap Dalton. *Draba incana*: Hurry Inlet. *Draba fladnizensis*: Turner Sund. *Ranunculus affinis*: Sabine Ö. *Ranunculus nivalis*: Sabine Ö. *Chamaenerium latifolium*: Hurry Inlet (C. K.).

43. **Venturia ditricha** (Fr.) Karst.

Betula nana: Kap Irminger (G. A.).

44. **Leptosphaeria epicarecta** (Cooke) Sacc.

Carex saxatilis: Hurry Inlet (C. K.), Scoresby Sund (N. H.).

45. **Leptosphaeria Fuckelii** Niessl.

Calamagrostis neglecta: Kap Seaforth (N. H.).

46. **Leptosphaeria Silenes** de Not.

Silene acaulis: Tunok (C. K.).

47. **Pleospora herbarum** (Pers.) Rbh.

Calamagrostis neglecta: Hurry Inlet (N. H.). — *Draba nivalis*: Hurry Inlet (C. K.). — *Cardamine bellidifolia*: Kap Greg (N. H.). — *Ranunculus nivalis*: Sabine Ö (C. K.). — *Saxifraga hieraciifolia*: Scoresby Sund (C. K.). — *Polemonium humile*: Sabine Ö, Kap Borlase Warren (C. K.). — *Pedicularis hirsuta*: Turner Sund (C. K.). — *Campanula uniflora*: Kap Dalton, Turner Sund (C. K.). — *Erigeron neglectum*: Kap Borlase Warren (C. K.).

48. **Pleospora pentamera** Karst.

Elyna Bellardi: Sabine Ö (C. K.). — *Festuca ovina*: Kap Borlase Warren (C. K.). — *Luzula multiflora*: Sabine Ö (N. H.).

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49. **Pleospora discors** (Mont.) Ces. et Not.
Carex rigida: Turner Sund (C. K.).

50. **Pleospora deflectens** Karst.
Poa abbreviata: Kap Borlase Warren (N. H.).

51. **Pleospora vagans** Niessl.
Phippsia algida: Turner Sund (C. K.).

52. **Pleospora Elynae** (Rbh.) Ces. et Not.
Juncus arcticus: Hurry Inlet (C. K.).

53. **Pleospora platyspora** Sacc.
Armeria sibirica: Hurry Inlet (C. K.).

54. **Pleospora Drabae** Schroet.
Draba alpina: Kap Borlase Warren. *Draba fladnizensis*: Kap Brewster (C. K.).

55. **Pyrenophora comata** (Niessl.) Sacc.
Alsine biflora: Turner Sund (C. K.).

56. **Ophiobolus brachystomum** Sacc.
Oxyria digyna: Turner Sund (C. K.).

57. **Didymosphaeria Cassiopes** Rostr.
Cassiope tetragona: Sabine Ö (C. K.).

Sordariaceae.

58. **Sordaria aviaria** (Karst.).
In fimo anserino: Turner Sund (N. H.).

59. **Sporormia heptamera** Awd.
In fimo anserino: Kap Seaforth (N. H.).

60. **Sporormia intermedia** Awd.
In fimo lupino: Kap Dalton (N. H.).

61. **Sporormia octomera** Awd.
In fimo anserino: Sabine Ö (N. H.).

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Dothideaceae.

62. **Dothidella thoracella** (Rutstr.) Sacc.

Sedum Rhodiola: Tasiusak (C. K.).

63. **Dothidella Vaccinii** Rostr.

Vaccinium uliginosum: Sarfakajik (C. K.).

Hysteriaceae.

64. **Lophodermium juniperinum** (Fr.) de Not.

Juniperus alpina: Grus Ö, Kap Dan (C. K.).

65. **Lophodermium maculare** (Fr.) de Not.

Vaccinium uliginosum: Hurry Inlet (C. K.), Fleming Inlet, Kap Brown (N. H.), Kap Vedel (G. A.).

66. **Lophodermium arundinaceum** (Schrad.) Lév.

Poa sp., Calamagrostis neglecta: Kingorsuak (C. K.).

Phacidiaceae.

67. **Trochila Epilobii** Karst.

Chamaenerium angustifolium: Tasiusak (C. K.).

68. **Trochila ignobilis** Karst.

Carex sp.: Stenö, Ikatek (C. K.). — *Carex glareosa*: Kap Irminger (G. A.).

69. **Rhytisma salicinum** (Pers.) Fr.

Salix arctica: Forsblads Fjord (N. H.), Kap Brown (C. K.). — *Salix glauca*: Kardlortok Sö, Tasiusak (C. K.). — *Salix herbacea*: Kap Wandel (C. K.).

70. **Rhytisma Bistortae** (DC.) Rostr.

Polygonum viviparum: Ikatek (C. K.).

Bulgariaceae.

71. **Ombrophila Archangelicae** n. sp. Cupulis gregariis, carnosis, siccis corneis, sessilibus, concavis, rufo-violaceis, extus subtiliter furfuraceis, margine paululum crenulato, 2—4 mm. lat. Ascis cylindraceis, longit. 110—120 μ, crassit. 8—9 μ, pars

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sporifer. 90—100 μ. Sporidiis monostichis, ellipsoideis, longit. 13 μ, crassit. 7 μ. Paraphysibus filiformibus.

Ad caules emortuos *Archangelicae officinalis*: Kingorsuak (C. K.).

Ascobolaceae.

72. **Ascobolus furfuraceus** Pers.

In fimo lupino: Kap Dalton (N. H.).

73. **Lasiobolus equinus** (Müll.) Karst.

In fimo lupino: Kap Dalton (N. H.).

74. **Ryparobius hyalinellus** (Karst.) Sacc.

In stercore: Kap Dalton (N. H.).

Pezizaceae.

75. **Lachnea scutellata** (L.).

Hurry Inlet (C. K.).

76. **Phialea virgultorum** (Vahl) Sacc.

In ramis ligneis: Tasiusak (C. K.).

77. **Mollisia graminis** (Desm.) Karst.

Poa glauca: Turner Sund (C. K.).

Sphaeropsideae.

78. **Phoma herbarum** West.

Cerastium sp.: Stenö (C. K.). — *Cerastium trigynum*: N. Aputitek (G. A.). — *Pedicularis hirsuta*: Turner Sund (C. K.).

79. **Asteroma alpinum** Sacc.

Arctostaphylos alpina: Kap Dalton (C. K.).

80. **Placosphaeria Bartsiae** Mass.

In foliis vivis *Bartsiae alpinae*: Tunok, Tasiusak (C. K.).

81. **Hendersonia Poae** n. sp. Peritheciis innatis, gregariis; conidiis compactis, cylindraceis, curvulis, fuscis, 3-septatis, obtusis, longit. 25—27 μ, crassit. 9—10 μ.

In foliis *Poae alpinae*: Fleming Inlet (C. K.).

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82. **Septoria cercosperma** Rostr.

Ranunculus nivalis: Sabine Ö (N. H.). — *Ranunculus pygmaeus*: N. Aputitek (G. A.). — *Cerastium trigynum*: N. Aputitek (G. A.). — *Archangelica officinalis*: Angmagsalik. — *Taraxacum*: Angmagsalik. — In capsulis *Veronicae saxatilis*: Tasiusak (C. K.).

83. **Septoria semilunaris** Joh.

Poa glauca: Skærgaardshalvöen (G. A.).

84. **Rhabdospora longissima** Sacc.

Arabis alpina: Turner Sund (C. K.).

Melanconiaceae.

85. **Harssonia Chamaenerii** Rostr.

Chamaenerium angustifolium: Angmagsalik (C. K.).

Hyphomycetes.

86. **Oospora nivea** (Fr.) Sacc.

In fimo anserino: Kap Dalton (C. K.), Sabine Ö (N. H.).

87. **Aspergillus clavatus** Desm.

In fimo tetraonis: Grus Ö (C. K.).

88. **Torula herbarum** Link.

Chamaenerium latifolium: Turner Sund (C. K.).

89. **Cladosporium herbarum** (Pers.).

Rhodiola: Jærnö. — *Oxyria digyna*: Jamesons Land. — *Salix groenlandica*: Kap Dalton (C. K.).

90. **Cladosporium graminum** Cda.

Poa pratensis: Hurry Inlet (C. K.).

11—7—1904.

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IV.

Lichenes

expeditionis G. Amdrup (1898—1902).

Enumeravit **Edv. A. Wainio.**

1905.

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I. Discolichenes.

A. Cyclocarpeae.

Trib. 1. *Gyrophoreae.*

1. Umbilicaria.

1. **U. rugifera** Nyl., Lich. Scand. p. 117. *Gyrophora* Th. Fr., Lich. Scand. p. 156, pr. p. (excl. *U. stipitata* Nyl., quae speciem autonomam constituit secundum specimina orig. in herb. Nyl.).

In rupe prope Turner Sund (12 m.). N. 14. Fert.

2. **U. cylindrica** (L.) Dub.

Var. **Delisei** (Despr.) Nyl., Lich. Scand. p. 117. *Gyrophora* Th. Fr., Lich. Scand. p. 158.

In rupibus ad Kap Dalton, ad Turner Sund, n. 4, 6 (7 m.), 7 (8 m.), 13, et ad Lagunas meridionales in insula Jan Mayen. Fert.

3. **U. hyperborea** Hoffm. *Gyrophora hyperborea α. primaria* Th. Fr., Lich. Scand. p. 160.

In rupibus ad Turner Sund, n. 4, et in insula Jan Mayen. Fert.

4. **U. arctica** (Ach.) Nyl., Lich. Lapp. Or. p. 123. *Gyrophora hyperborea β. arctica* Th. Fr., Lich. Scand. p. 161.

In rupe granitica ad Fleming Inlet et ad Lagunas meridionales in insula Jan Mayen. Fert.

5. **U. proboscidea** (L.) D. C.

F. **subnuda** Wain.

Thallus subtus rhizinis fere destitutus. In rupibus in insula Jan Mayen. Fert.

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Trib. 2. *Parmelieae.*

1. Usnea.

1. **U. sulphurea** (Koenig) Th. Fr., Lich. Spitsb. p. 9. *Neuropogon melaxanthus* Nyl., Syn. Lich. p. 272.

Var. **granulifera** Wain. in Exped. Antarct. Belge Lich. (1903) p. 11.

Thallus soraliis tuberculiformibus aut primum applanatis instructus. Stratum myelohyphicum crebrum, KHO non reagens.

In rupibus ad Kap Dalton (n. V, VI etc.) et prope Lagunas meridionales in insula Jan Mayen. Ster.

2. Alectoria.

1. **A. chalybeiformis** (L.) Nyl.

F. **intricans** Wain., Lich. Caucas. (1899) p. 276. *A. chalybeiformis* Nyl., Fl. 1869 p. 444.

Supra *Cetrariam aculeatam* et alios lichenes prope Lagunas meridionales in insula Jan Mayen. Ster.

2. **A. nigricans** (Ach.) Nyl.

Supra muscos et lichenes in rupibus in insula Jan Mayen et ad Kap Greg. Ster.

3. **A. ochroleuca** (Ehrh.) Nyl. *A. ochroleuca a. rigida* (Vill.) Th. Fr., Lich. Scand. p. 19.

Supra muscos in rupibus prope Lagunas meridionales in insula Jan Mayen. Ster.

4. **A. sarmentosa** Ach.

Var. **cincinnata** (Fr.) Nyl.

Supra muscos et lichenes in rupibus prope Lagunas meridionales in insula Jan Mayen. Ster.

3. Cetraria.

1. **C. hiascens** (Fr.) Th. Fr., Lich. Scand. p. 98. *C. Delisei* (Bory) Nyl., Lich. Lapp. Or. p. 79.

Var. **Delisei** (Bory) Wain. Laciniae thalli apicibus laceratis. Est forma typica hujus speciei.

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Supra muscos et alias plantas destructas in insula Jan Mayen, in Henry Land (840 m.), in Skærgaards Halvöen (n. 35), prope Turner Sund et pluribus locis ad Kap Dalton (n. II, V, VI, etc.). Specimina lecta sterilia sunt.

Var. **fastigiata** (Del.) Nyl. in Norrl. Lich. Lapp. p. 323.

In rupe (12 m. s. m.) ad Turner Sund (n. 14). Ster.

2. **C. crispa** (Ach.) Nyl. Wain., Adj. Lich. Lapp. I p. 119.

Supra muscos prope Lagunas meridionales in insula Jan Mayen. Ster.

3. **C. aculeata** (Schreb.) Fr.

Prope Lagunas meridionales in insula Jan Mayen. Ster.

4. **C. hepatison** (Ach.) Wain., Lich. Caucas. (1899) p. 278. *Cetraria Fahlunensis* Th. Fr., Lich. Scand. p. 108.

In rupe ad Turner Sund (n. 4). Ster. Medulla thalli KHO lutescens.

5. **C. Fahlunensis** (L.) Wain., Lich. Caucas. p. 278. *Platysma commixtum* Nyl.

Var. **Groenlandica** Wain.

Thallus dichotome repetito-laciniatus, laciniis elongatis, linearibus, circ. 0,5 mm. latis, leviter concavis aut partim planis, nitidis, fusco-fuligineis, esorediatis, increbre imbribatis, subtus et margine ciliis paucis increbris instructus. Medulla thalli KHO non reagens. Conceptacula pycnoconidiorum verruculas parum elevatas marginales formantia, ostiolo haud impresso, qua nota haec variatio a *Parmelia stygia* differt, cui ceterum habitu simillima est. Revera valde affinis est *Cetrariae Fahlunensi* (L.) Wain. (= *Plat. commixto* Nyl.), et ab ejus var. *tenuisecta* Th. Fr. laciniis longioribus latioribusque linearibus differt.

In rupe ad Kap Dalton. Ster.

6. **C. nivalis** (L.) Ach.

Ad plantas destructas in insula Jan Mayen, in Henry Land (840 m.), ad Kap Greg et Kap Dalton (n. VI). Ster.

7. **C. cucullata** (Bell.) Ach.

Ad Kap Greg. Ster.

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4. Parmelia.

1. **P. saxatilis** (L.) Ach.

Ad rupem in insula Jan Mayen. Ster.

2. **P. omphalodes** (L.) Ach.

Var. **panniformis** Ach.

In rupe et supra alios lichenes rupium et ad lignum in insula Jan Mayen. Ster.

3. **P. pubescens** (L.) Wain., Lich. Caucas. p. 281. *P. lanata* Wallr., Nyl., Lich. Scand. p. 103.

Ad rupem in insula Jan Mayen, supra muscos in rupe ad Kap Dalton, ad alios lichenes et supra rupem prope Fleming Inlet. Ster.

Trib. 3. *Thamnolieae.*

1. Thamnolia.

1. **Th. vermicularis** (Sw.) Schaer., Enum. Lich. Eur. p. 243; Nyl., Syn. Lich. p. 264; Minks, Fl. 1874 p. 337; Cromb., Brit. Lich. p. 185. *Cladonia* (?) Th. Fr., Lich. Arct. p. 161.

Supra terram arenosam ad Hurry Inlet et supra muscos in rupe ad Lagunas meridionales in insula Jan Mayen. Ster.

Trib. 4. *Stereocauleae.*

1. Stereocaulon.

1. **St. alpinum** Laur.

Supra muscos rupium et in ipsa rupe locis numerosis in insula Jan Mayen, in Henry Land (840 m. s. m.) et in Kap Greg. Ster.

2. **St. evolutum** Graewe in Bot. Not. 1865 p. 181; Th. Fr., Lich. Scand. p. 45.

In rupe ad Kap Dalton. Ster. Thallo glabro a *St. alpino* differt.

Trib. 5. *Lecanoreae.*

1. Lecanora.

1. **L. (Candelariella) vitellina** (Ehrh.) Ach.

Supra terram arenosam et in rupe ad Fleming Inlet et ad

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Turner Sund (n. 4 et 16). Fert. — Asci polyspori. Thallus KHO non reagens. Apothecia margine crenulato, esorediato.

2. **L. (Fulgensia) bracteata** (Hoffm.) Ach.

Var. **alpina** Th. Fr., Lich. Scand. p. 223 (Lich. Arct. 1860 p. 81).

Ad terram arenosam prope Hurry Inlet (n. I). Ster.

3. **L. (Squamaria) alphoplaca** (Wahlenb.) Ach., Nyl., Fl. 1873 p. 18; Wain., Lich. Caucas. p. 286.

Thallus KHO superne lutescens et demum rubescens, intus non reagens.

In rupe ad Forsblads Fjord. Fert.

4. **L. (Eulecanora) atrosulphurea** (Wahlenb.) Ach.

Var. **normalis** Th. Fr., Lich. Scand. p. 257.

Ad lignum vetustum in insula Jan Mayen. Fert.

5. **L. polytropa** (Ehrh.) Th. Fr.

Var. **vulgaris** Flot.

In rupe ad Turner Sund (4 m.) et ad Fleming Inlet. Fert.

6. **L. (Aspicilia) calcarea** (L.) Sommerf.

Var. **contorta** (Hoffm.) Hepp.

In rupe ad Turner Sund (n. 10), 2000 p. s. m. Thallus KHO non reagens. Fert.

7. **L. gibbosa** (Ach.) Nyl.

Var. **subdepressa** Nyl.

In rupe in insula Jan Mayen. Fert. Thallus KHO non reagens.

8. **L. verrucosa** (Ach.) Laur., Th. Fr., Lich. Scand. p. 273.

Supra plantas destructas ad Kap Dalton (L. V) et ad terram arenosam loco haud indicato (in insula Jan Mayen) n. 318 A. Fert. Thallus KHO non reagens.

2. Placopsis.

1. **Pl. gelida** (L.) Nyl., Lich. Lapp. Or. p. 126 (conf. Wain., Lich. Nov. Rar. II, 1899, p. 186). *Lecanora* Th. Fr., Lich. Scand. p. 228.

Ad lapides vulcanicos in insula Jan Mayen.

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3. Ochrolechia.

1. **O. tartarea** (L.) Mass.

Var. **saxorum** (Retz.) Wain. *Lichen saxorum* Retz., Fl. Scand. Prodr. ed. II (1795) p. 276.

Thallus crassus, subcontinuus, demum vulgo sorediosus, KHO passim leviter lutescens, $CaCl_2O_2$ intus parum aut leviter rubescens, at his reagentiis unitis intus bene rubescens. Medulla jodo passim leviter caerulescens, partim non reagens. Est forma typica hujus speciei.

Supra muscos in rupe in insula Jan Mayen et ad Fleming Inlet.

Var. **inspersa** Wain.

Thallus verruculas dispersas, subglobosas, circ. 0,2—0,4 mm. latas formans, neque KHO, nec $CaCl_2O_2$, nec his reagentiis unitis reagens, esorediatus. Apothecia circ. 2,5—1,2 mm. lata, disco nudo, pallido, KHO lutescente, $CaCl_2O_2$ non reagente aut levissime rubente, at his reagentiis unitis bene rubente, margine his reagentiis non reagente.

Supra *Racomitrium lanuginosum* ad rupem in monte Hoyberg in insula Jan Mayen. Fert.

Var. **frigida** (Sw.) Ach.

Medulla thalli jodo leviter caerulescens. Hypothallus in spinulas erectas continuatus.

Supra lichenes et muscos in monte Hoyberg in insula Jan Mayen. Ster.

Trib. 6. *Pertusarieae.*

1. Pertusaria.

1. **P. oculata** (Dicks.) Th. Fr., Lich. Scand. p. 307.

Supra muscos destructos in rupe montis Hoyberg in insula Jan Mayen. Ster.

Trib. 7. *Theloschisteae.*

1. Xanthoria.

1. **X. polycarpa** (Ehrh.) Wain. ***X. lychnea** (Ach.) Wain.

Ad lapides in Kap Dalton (n. l). Ster.

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2. Placodium.

1. **Pl. elegans** (Link) D. C. ***Pl. granulosum** (Schaer.) Wain., Lich. Sibir. Merid. (1896) p. 12.

In rupe ad Fleming Inlet et Turner Sund, 2000 ped. s. m. (n. 12 et 13). Ster.

2. **Pl. verruculiferum** Wain.

Thallus arcte adnatus, radiato-laciniatus, laciniis circ. 0,8—0,3 mm. latis, superne convexis, circ. 0,4—0,6 mm. crassis, superne fulvescens, neque pruinosus, nec lacunosus, centrum versus isidiis brevibus globosis verruculaeformibus minutis instructus. Habitu simile est *Pl. Heppiano* (Müll. Arg.) Wain., Lich. Cauc. p. 295, at isidiis ab eo differens et forsan ejus subspecies.

Ad lapidem vulcanicum in insula Jan Mayen. Ster.

3. **Pl. cerinum** (Ehrh.) Wain., Lich. Caucas. p. 296. *Lecanora pyracea* Nyl., Lich. Lapp. Or. p. 129.

***Pl. vitellinulum** (Nyl.) Wain.

Ad lapidem vulcanicum in insula Jan Mayen. Fert.

4. **Pl. jungermanniae** (Vahl) Wain., Lich. Caucas. p. 298.

Var. **genuina** Th. Fr., Lich. Scand. p. 179.

Supra muscos destructos in rupe ad Turner Sund (n. 13). Fert.

Var. **subolivacea** Th. Fr., Lich. Scand. p. 180.

Ad plantas destructas in Kap Dalton (n. V). Fert.

5. **Pl. ferrugineum** (Huds.) Hepp.

Var. **bryacea** Wain., Adj. Lich. Lapp. I p. 144.

A *Pl. jungermanniae* colore apotheciorum differt et simile est *Pl. ferrugineo.*

Supra muscos destructos in rupe ad Kap Dalton. Fert.

6. **Pl. tetraspora** (Nyl.) Wain. Lecanora Nyl., Lich. Lapp. Or. p. 397.

Supra muscos destructos in rupe ad Lagunas meridionales in insula Jan Mayen et in Canning Land. Fert.

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Trib. 8. *Buellieae.*

1. Physcia.

1. **Ph. stellaris** (L.) Nyl. ***Ph. tribacia** (Ach.) Wain., Adj. Lich. Lapp. I p. 135.

Ad lapides in Kap Dalton (n. V) et ad Turner Sund (n. 11). Ster.

2. **Ph. pulverulenta** (Schreb.) Wain. ***Ph. muscigena** (Ach.) Wain., Adj. Lich. Lapp. I p. 131.

In rupe ad Kap Dalton. Ster.

2. Rinodina.

1. **R. muiaraea** (Ach.) Th. Fr., Lich. Scand. p. 194.

Var. **normalis** Th. Fr., l. c.

Supra plantas destructas ad Turner Sund, 2 m. s. m. (n. 1). — Apothecia nuda. Epithecium rubescens. Hypothecium albidum, inferne fuscescens. Sporae long. circ. 0,032, crass. 0,014 mm., endosporio inaequaliter incrassato, ad apicem et septum crassiore.

2. **R. archaea** (Ach.) Wain. *Parmelia sophodes γ. archaea* Ach., Meth. Lich. (1803) p. 156. *Lichen turfaceus* Wahlenb., Lich. Lapp. (1812) p. 408. *Lecanora turfacea* Wain., Adj. Lich. Lapp. I p. 153.

Var. **orbata** (Ach.) Wain. (l. c.).

Supra muscos destructos in insula Jan Mayen et ad Kap Dalton (n. V) et ad Turner Sund (n. 9). Fert.

3. Buellia.

1. **B. disciformis** (Fr.) Br. et Rostr.

Var. **insignis** (Naeg.) Wain., Adj. Lich. Lapp. II p. 112.

F. **muscorum** (Schaer.) Wain., l. c. p. 113.

Supra muscos destructos in monte Hoyberg in insula Jan Mayen. Sporae 8:nae, fuligineae, 1-septatae, long. 0,024—0,030, crass. 0,11—0,12 mm.

F. **albocincta** Th. Fr., Lich. Scand. p. 591. Wain., Adj. Lich. Lapp. II p. 113.

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Supra plantas destructas ad Turner Sund, 8 m. s. m. (n. 7). Fert. Sporae long. circ. 0,028, crass. 0,012 mm.

2. ***B. lauricassiae** (Fée) Wain., Lich. Welw. p. 413. *Lecidea triphragmia* Nyl., Prodr. Lich. Gall. p. 141.

Sporae hujus speciminis long. 0,016—0,022, crass. 0,007—0,006 mm., 3-septatae, fuscofuligineae.

Supra muscos destructos in Canning Land. Fert.

3. **B. punctiformis** (Hoffm.) Mass. Wain., Lich. Caucas. p. 305. *B. myriocarpa* Th. Fr., Lich. Scand. p. 595.

F. **stigmatea** (Koerb.) Wain., Adj. Lich. Lapp. II p. 114.

Supra plantas destructas (excrementa) ad Kap Dalton (n. V) et ad lapides vulcanicos in insula Jan Mayen. — Sporae membrana aequaliter incrassata.

F. **punctata** (Koerb.) Wain., l. c.

In rupe ad Fleming Inlet.

4. **B. Groenlandica** Wain. (n. sp.).

Thallus tenuis, verrucoso-areolatus, dispersus, areolis sordide cinerascentibus, KHO non reagentibus, hypothallo nigricante tenui distincto. Medulla jodo non reagens. Apothecia minuta, 0,2—0,15 mm. lata, demum adnata, nigra, nuda, disco plano aut vulgo demum umbonato, margine tenui, persistente aut demum excluso. Hypothecium fusco-nigrum. Excipulum fuscofuligineum. Sporae 8:nae, distichae, pulchre polari-dyblastae, ellipsoideae, septo crasso (poro instructo), membrana ceterum aequaliter incrassata, long. 0,012—0,014, crass. 0,007—0,008 mm. Hymenium jodo persistenter caerulescens. — Habitu similis est *B. punctiformi* f. *punctatae* (Koerb.), at disco saepe umbonato et sporis polaridyblastis ab ea differens.

Supra lapidem ad Turner Sund, 7 m. s. m. (n. 6).

Trib. 9. *Peltigereae.*

1. Peltigera.

1. **P. aphthosa** (L.) Hoffm.

Supra muscos et alias plantas destructas ad Kap Dalton (n. III, V) et Hurry Inlet in Kingua (n. II, IV). Fert.

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2. **P. canina** (L.) Hoffm.

Supra muscos rupium prope Lagunas meridionales in insula Jan Mayen. Supra muscos vigentes et destructos in Sabine Ö (n. 193, 232 b), ad Hurry Inlet (n. 1), Kap Borlase Warren (n. 274 b), Fleming Inlet, Turner Sund (n. 2, 9), Kap Dalton (n. III, 380). Fert.

2. Nephroma.

1. **N. arcticum** (L.) Fr.

Supra muscos et lichenes vigentes et destructos rupium in monte Hoyberg in insula Jan Mayen. Ster.

3. Solorina.

1. **S. crocea** (L.) Ach.

Supra muscos destructos rupium in monte Hoyberg in insula Jan Mayen et ad terram arenosam ad Hurry Inlet in Liverpool Kyst (n. III). Fert.

2. **S. octospora** Arn.

Supra muscos destructos rupium ad Fleming Inlet. Fert.

3. **S. bispora** Nyl., Syn. Lich. p. 334; Wain., Lich. Caucas. p. 307.

Sporae binae, long. 0,070—0,106, crass. 0,030—0,046 millim., 1-septatae, fusco-rufescentes, medio constrictae. Gonidia leptogonidia, vulgo ellipsoidea, simplicia, guttulas oleosas continentia, membrana tenuissima, long. circ. 0,007—0,005, crass. 0,004—0,003 mm.

Ad muscos destructos et terram arenosam prope Lagunas meridionales in insula Jan Mayen et Sabine Ö (n. 211 a) et ad Forsblads Fjord. Fert.

Trib. 10. *Pannarieae.*

1. Parmeliella.

1. **P. lepidiota** (Sommerf.) Wain., Lich. Caucas. p. 309.

F. **tristis** Th. Fr., Lich. Arct. p. 74.

In hoc specimine apothecia (microscopio visa) lecideina, margine proprio tenui, excipulo proprio thallo immerso, in parte exteriore e stratis pluribus sat grosse cellulosis parenchymaticis formato, at

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demum habitu lecanorina aut zeorina, thallo marginem thallodem crenulatam, discum superantem formante cincta. Sporae simplices.

Supra muscos destructos ad rupem in monte Hoyberg in insula Jan Mayen. Fert. — Parce haec species (f. *primaria* Wain.) etiam ad Turner Sund lecta est (n. 9 pr. p.).

2. Psoroma.

1. **Ps. hypnorum** (Hoffm.) Fr.

Supra plantas destructas et terram arenosam in rupibus ad Kap Dalton (n. V) et Turner Sund (n. 6, 7) et in monte Hoyberg in insula Jan Mayen. Fert.

Trib. 11. *Collemeae.*

1. Leptogium.

1. **L. lacerum** (Sw.) Koerb.

F. **majus** Koerb.

Supra plantas destructas in rupe ad Kap Dalton (n. V). Ster.

Trib. 12. *Lecideae.*

1. Cladonia.

1. **Cl. rangiferina** (L.) Web.

Supra et inter muscos in monte Hoyberg in insula Jan Mayen. Ster.

2. **Cl. sylvatica** (L.) Rabenh.

Var. **sylvestris** Oed. Wain., Mon. Clad. I p. 20, III p. 222.

Supra et inter muscos in monte Hoyberg in insula Jan Mayen. Ster.

Modif. **spumosa** Floerk. Wain., Mon. Clad. I p. 27.

In hoc specimine ramuli apicales parcissime nutantes. Gelatina pycnoconidiorum materiam coccineam haud continens, qua nota certe a *Cl. alpestri* differt.

Ad Kap Dalton. Ster.

3. **Cl. coccifera** (L.) Willd.

Var. **stemmatina** Ach.

Supra muscos destructos ad Kap Dalton (n. VI), Turner Sund (n. 6) et Hurry Inlet in Liverpool Kyst (n. IV). Cum apotheciis male evolutis.

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Var. **pleurota** (Floerk.) Schaer.

Supra muscos destructos ad Turner Sund, 8 m. s. m. (n. 7). Ster.

4. **Cl. amaurocraea** (Floerk.) Schaer.

F. **oxyceras** Ach. Wain., Mon. Clad. Univ. I p. 249, 254, III p. 232.

Supra et inter muscos ad Lagunas meridionales et in monte Hoyberg in insula Jan Mayen. Ster.

5. **Cl. cariosa** (Ach.) Spreng.

Modif. **pruniformis** Norm. Wain., Mon. Clad. Univ. II p. 52, III p. 248.

Supra terram humosam ad Turner Sund (n. 9). Parce etiam fertilis.

6. **Cl. gracilis** (L.) Willd.

Var. **chordalis** (Floerk.) Schaer.

Ad plantas destructas in monte Hoyberg in insula Jan Mayen. Fert.

7. **Cl. cerasphora** Wain., Mon. Clad. Univ. II p. 167, III p. 257.

F. **stricta** Wain., l. c. II p. 169, III p. 257.

Inter Racomitrium lanuginosum in rupe ad Lagunas meridionales in insula Jan Mayen. Ster. — Podetia KHO lutescentia.

8. **Cl. pyxidata** (L.) Fr.

Var. **neglecta** (Floerk.) Mass.

Supra muscos destructos ad Kap Borlase Warren (n. 274 b). Ster.

Var. **chlorophaea** Floerk.

Supra plantas destructas ad Fleming Inlet et ad Lagunas meridionales in insula Jan Mayen. Ster.

9. **Cl. fimbriata** (L.) Fr.

Modif. **minor** (Hag.) Wain., Mon. Clad. Univ. II p. 258, III p. 253.

Supra plantas destructas ad Turner Sund (n. 1, 5). Ster.

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2. Lecidea.

1. **L. (Lopadium) pezizoidea** Ach.

Var. **muscicola** (Sommerf.) Th. Fr., Lich. Scand. p. 389; Wain., Adj. Lich. Lapp. II p. 123.

Supra plantas destructas in rupe ad Turner Sund, 2 m. s. m. (n. 7). Fert.

2. **L. (Rhizocarpon) geographica** (L.) Fr.

In saxis et rupibus ad Fleming Inlet et in insula Jan Mayen. Fert.

3. **L. concreta** (Ach.) Wain., Lich. Caucas. p. 319.

F. **geminata** (Flot.) Wain., l. c.

In saxis et rupibus ad Fleming Inlet, Turner Sund, 2000 ped. s. m. (n. 10 et 12), Kap Dalton (n. III) et in Insula Jan Mayen. Fert.

4. **L. (Psora) rubiformis** Wahlenb.

Ad terram arenosam in fissuris rupium ad Turner Sund (n. 13). Fert.

5. **L. (Biatora) cuprea** Sommerf.

In hoc specimine excipulum in margine incoloratum, ex hyphis radiantibus pachydermaticis conglutinatis, lumine angusto instructis formatum. Hypothecium dilute fuscescens, passim pallide fuscescens. Hymenium decoloratum, granulis nullis, jodo caerulescens, dein vinose rubens. Paraphyses arcte cohaerentes. Sporae parcissime visae, simplices, decolores, long. 0,010, crass. 0,0085 mm. Apothecia disco fusco vel fusco-nigricante convexo, margine vulgo pallidiore. Thallus albidus, sat continuus, sat tenuis, verruculoso-inaequalis.

Supra muscos destructos in rupe in Canning Land.

6. **L. (Eulecidea) goniophila** Floerk.

***L. latypiza** Nyl.

Thallus in hoc specimine dispersus, tenuis, KHO lutescens. Excipulum extus caeruleo-smaragdulo-fuligineum, intus subalbidum. Hypothecium obscure fulvescens aut fulvo-fuscescens. Epithecium caeruleo-smaragdulo-fuligineum. Paraphyses sat arcte cohaerentes. Sporae ellipsoideae, simplices, decolores.

Ad lapidem in Kap Dalton (n. VI).

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7. **L. glomerulosa** D.C.

F. **Laureri** (Hepp) Wain., Adj. Lich. Lapp. II p. 93.

Ad lignum vetustum in insula Jan Mayen.

F. **euphorea** (Floerk.) Wain., l. c. p. 94.

Ad lignum vetustum in insula Jan Mayen.

8. **L. subcongrua** Nyl., Fl. 1874 p. 11; Wain., Adj. Lich. Lapp. II p. 97.

Excipulum extus in margine smaragdulo-caerulescens, basi superne smaragdulo-caerulescens, inferne violaceo-fuligineum. Hypothecium albidum. Epithecium caeruleo-smaragdulum. Paraphyses arcte cohaerentes.

Ad lapides prope Turner Sund usque ad 2000 ped. s. m. (n. 12 et 4).

9. **L. assimilata** Nyl., Lich. Scand. p. 221.

F. **irrubata** Th. Fr., Lich. Scand. p. 522; Wain., Adj. Lich. Lapp. II p. 85.

Ad terram arenosam et muscos destructos in Kap Dalton.

10. **L. limosa** Ach. Th. Fr., Lich. Scand. p. 538.

Ad terram arenosam et muscos destructos in Kap Dalton (n. V).

11. **L. paupercula** Th. Fr., Lich. Scand. p. 482; Wain., Adj. Lich. Lapp. II p. 51.

In rupe ad Fleming Inlet et in insula Jan Mayen.

12. **L. Dicksonii** Ach. Th. Fr., Lich. Scand. p. 516. *L. atroferrata* Deichm. Br., Enum. Lich. Groenl. p. 503.

In rupibus et lapidibus ad Turner Sund, 7 m. s. m. (n. 6) et in insula Jan Mayen.

13. **L. lapicida** (Ach.) Wain., Adj. Lich. Lapp. II p. 55.

Var. **declinans** Nyl., Lich. Scand. p. 226.

Thallus cinerascens, KHO non reagens, medulla jodo caerulescens. Excipulum extus fuscescens, intus pallidum. Hypothecium dilute fuscescens. Epithecium smaragdulo-caerulescens.

Ad rupem in insula Jan Mayen.

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Trib. 13. *Acarosporeae.*

1. Acarospora.

1. **A. glaucocarpa** (Wahlenb.) Koerb.

Ad lapidem vulcanicum in Kap Dalton (n. II). Fert.

2. **A. fuscata** (Schrad.) Arn.

Var. **smaragdula** (Wahlenb.) Wain.

Ad lapidem vulcanicum in insula Jan Mayen. Fert.

3. ***A. discreta** (Ach.) Th. Fr.

In rupe ad Fleming Inlet. Fert.

2. Thelocarpon.

1. **Th. epibolum** Nyl., Fl. 1866 p. 420; Wain., Lich. Caucas. p. 331.

Supra partes mortuas *Solorinae octosporae* Arn. ad Fleming Inlet.

B. Hysterieae.

Trib. 1. *Graphideae.*

1. Xylographa.

1. **X. parallela** (Ach.) Fr. Wain., Lich. Caucas. p. 334.

Var. **difformis** Wain., Adj. Lich. Lapp. II p. 148.

Gonidia thalli cystococcoidea, globosa, simplicia, membrana crassitudine mediocri. Perithecium sordide pallidum. Hypothecium albidum. Hymenium jodo caerulescens, dein sordide vinose rubens. Paraphyses apice ramosae, haud connexae. Asci clavati. Sporae 8 : nae, distichae, simplices, decolores, oblongae, long. 0,010—0,012, crass. 0,004—0,005 mm.

Ad lignum vetustum in insula Jan Mayen.

C. Coniocarpeae.

Trib. 1. *Sphaerophoreae.*

1. Sphaerophorus.

1. **Sph. fragilis** (L.) Koerb.

Ad rupem in monte Hoyberg in insula Jan Mayen. Ster.

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II. Pyrenolichenes.

1. Dermatocarpon.

1. **D. (Endopyrenium) cinereum** (Pers.) Th. Fr. *Verrucaria tephroides* (Ach.) Nyl., Lich. Scand. p. 267.

Supra terram arenosam ad Turner Sund (n. 13). Fert.

2. Verrucaria.

1. **V. aethiobola** Ach. Wain., Adj. Lich. Lapp. II p. 173.

Ad lapidem vulcanicum in insula Jan Mayen.

Ad formam atypicam pertinet thallo sordide albicante disperso sat tenui instructam. Sporae long. 0,026, crass. 0,013 mm.

3. Endocarpon.

1. **E. pulvinatum** Th. Fr., Lich. Arct. p. 257. *Dermatocarpon* Koerb., Parerg. Lich. Germ. p. 308; Wain., Adj. Lich. Lapp. II p. 166.

Gonidia thalli pleurococcacea. Gonidia hymenialia stichococcacea, long. 0,012—0,004, crass. 0,0045—0,0025 mm. Amphithecium extus fuscescens, gonidia pleurococcacea continens. Perithecium decoloratum vel pallidum. Periphyses bene evolutae.

In rupe ad Turner Sund, 2000 ped. s. m. (n. 12 et 13). Fert.

4. Staurothele.

1. **St. clopima** (Ach.) Th. Fr., Lich. Arct. p. 263; Wain., Lich. Caucas. p. 339.

In rupe ad Fleming Inlet et ad Turner Sund, 2000 ped. s. m. (n. 10 et 12).

5. Polyblastia.

1. **P. terrestris** Th. Fr., Polybl. Scand. p. 15.

Thallus bene evolutus, sat crassus, verrucoso-inaequalis, cinerascens. Apothecia amphithecio thallino obducta, vertice denudato nigro vulgo leviter impresso. Perithecium fuligineum, integrum, globosum. Sporae 8:nae, murales, decolores, demum pallidae, long. 0,040—0,052, crass. 0,022—0,024 mm.

Ad saxa friabilia laxe affixa in Kap Dalton (n. V).

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2. **P. pseudomyces** (Norm.) Th. Fr., Polybl. Scand. p. 26. *Staurothele* Norm., Vet. Akad. Förh. 1870 p. 805.

Thallus tenuis, nigricans. Apothecia hemisphaerica. Perithecium globosum, fusco-fuligineum, integrum. Nucleus jodo vinose rubens. Sporae 8:nae, fuscescentes, ellipsoideae aut oblongae, murales, cellulis paucis, long. 0,014—0,015, crass. 0,007—0,008 mm. Thallus algas varias, praesertimque micaroideas continens.

Supra terram humosam ad Turner Sund, 12 m. s. m. (n. 14).

Pharcidia.

1. **Ph. lichenum** Arn., Lich. Tirol VIII p. 302, XXI p. 153; Wain., Lich. Caucas. p. 342.

Supra thallum *Lecideae rubiformis* Wahlenb. ad Turner Sund (n. 13). — Ad fungos pertinet. Sporae long. 0,014, crass. 0,006 mm., 1-septatae, ovoideae, decolores, 8:nae, distichae, septo in medio. Paraphyses haud evolutae.

11—7—1904.

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V.

List

of the phanerogams and vascular cryptogams found on the coast 75°—66°20′ lat. N. of East Greenland.

By

Chr. Kruuse.

1905.

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The basis of this list are the plants collected by N. Hartz and the author on the Danish expedition to East Greenland in 1900; the older statements from the former expeditions to these regions have also been embodied viz.: Scoresby, Sabine, Zweite deutsche Nordpolarfahrt (Copeland and Pansch), den danske Expedition 1891—92 (N. Hartz), den svenske Expedition 1899 (A. G. Nathorst and P. Dusén), den danske Baadexpedition 1898—99 (Chr. Kruuse), den danske Baadexpedition 1900 (C. G. Amdrup).

During a visit in Stockholm and Upsala 1904 the author had opportunity of going through the great collections from these regions preserved in Kgl. Vetenskaps Akademien and the University of Upsala, and as a matter of course I have gone through the great Greenland herbarium in the botanical Museum of Copenhagen.

As to the limitation of the species I have followed Joh. Lange's Conspectus Floræ Grœnlandicæ with the alterations necessitated by the works of later inquirers, especially Gelert and Ostenfeld: Flora arctica I and Gelert: Notes on arctic plants (Botanisk Tidsskrift. Bd. 21).

On the coast of East Greenland, 75°—66°20′ lat. N., there are collections from the following places:

A. Northern coast-part between 75° and 73°30′ lat. N. Shannon Ø.
B. Northern inlet-part between 73°30′ and 70°20′ lat. N.

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C. The Scoresby Sund-part comprises Inlet-localities between 71°30′ and 70° lat. N.

D. The Kap Dalton-part comprises localities between 70° and 69°25′ lat. N.

E. Southern coast-part comprises localities between 69°25′ and 66°20′ lat. N.

The finder is stated in a parenthesis after the locality in the following way:

A. = C. G. Amdrup
C. & P. = Copeland and Pansch
D. = P. Dusén
H. = N. Hartz
K. = Chr. Kruuse.
A. G. N. = A. G. Nathorst.

A. "!" behind the names signifies that I have seen the specimens.

A. Northern coast-part between 75°—73°30′ lat. N.

	lat. N.
Shannon Ö	75°
Kuhn Ö	75°
Store og Lille Pendulum Öer	74° 30′
Sabine Ö	74° 30′
Hvalros Ö	74° 30′
Dronning Augusta Dal	74° 25′
Kap Borlase Warren	74° 15′
Clavering Ö	74° 10′
Hold with hope	73° 30′

B. Northern inlet-part from 73°30′—70°20′ lat. N.

	lat. N.
Kap Bennet	73° 28′
Franz Joseph Fjord	73° 30′-73°10′
Moskusoxefjord	73° 30′
Bontekoe Ö	73° 10′
Kjerulf Fjord	73° 10′
Ruth Ö	73° 5′

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	lat. N.
Sophia Stræde	72° 55′
Röhs Fjord	72° 40′
Forsblad Fjord	72° 30′
Polhem Dal	72° 30′
Scott Keltic Ö	72° 48′
Kap Parry	72° 30′
Mackenzie Bugt	72°
Antarctic Havn	72°
Örsteds Dal	71° 49′
Kap Brown	71° 48′
Fleming Inlet	71° 40′
Pingels Dal	71° 38′
Kap Fletcher	71° 36′
Murrays Ö	71° 32′
Kap Greg	70° 58′

C. The Scoresby Sund-part comprises the inlet-localities between 71°30′ and 70° lat. N.

	lat. N.
Klitdalen	70° 53′-58°
Vargodden	70° 51′
The Liverpool Kyst side of Hurry Inlet	70° 50′
The Jameson Land side Nathorst Fjeld	70° 48′
Fame Öer	70° 50′
Point Constable	70° 45′
Vardeklöft	70° 36′
Kap Hope	70° 27′
Kap Stewart	70° 25′
The west side of Jameson Land	71° 16′-70°25′

D. The Kap Dalton-part comprises localities between 70° and 69°25′ lat. N.

	lat. N.
Kap Brewster	70° 9′
Dunholm	69° 55′
Turner Sund	69° 45′
Henry Land	69° 35′
Kap Dalton	69° 25′

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E. Southern coast-part comprises the localities between 69°25′ and 66°20′ lat. N.

	lat. N.
Storbræ	68° 49′
Kap Vedel	68° 30′
Kap Irminger	68° 5′
Skærgaards Halvöen	68° 7′
Nordre-Aputitek	67° 48′
Söndre-Aputitek	67° 16′
Nualik	67° 16′
Kap Christiansen	67° 13′
Jagos Fjord	67° 6′
Langöen (Ikerasarmiut)	67° 4′
Kap Warming	67° 1′-2′
Lilleö	66° 58′
Kajarsak	66° 49′
Itivsalik	66° 47′
Kap Jörgensen	66° 45′
Nanertalik	66° 36′
Kap G. Holm	66° 36′
Ikersuak	66° 27′
Vahls Fjord	66° 22′

Fam. 1. Rosaceae.

1. Dryas octopetala L.

Lge. Consp. Fl. Grœnl. p. 2 & 234. Hartz Fanerog. p. 319 Dusén Gefässpfl. p. 12.

a. genuina.

Northern inlet-part: Fleming Inlet (K.)! Canning Ld. (H. & K.)!
Scoresby Sund: Nordvestfjord, Röde Ö, Danmarks Ö (H.)! Hurry Inlet (D.)! Liverpool Kyst (H. & K.)! Klitdalen (H. & K.)!
Kap Dalton-part: Turner Sund and Kap Dalton (K.)! Not found south of 69°25′ lat. N.

β. minor Hook.

Common between 74° and 69°, collected by all travellers.

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λ. hirsuta Hartz.

Northern coast-part: Hold with hope (H.)!
Scoresby Sund: Jameson Land (H.)! Danmarks Ö (H.)! Nordvestfjord (H.)! Klitdalen, Hurry Inlet (H. & K.)! (stony plain.)

δ. argentea A. Blytt.

Northern coast-part: Sabine Ö, Bontekoe Ö, Kap Parry (D.)! Hold with hope (H.)! Jameson Land (H.)! Ispynt in Vestfjord (H.)!
Southern inlet-part: Hurry Inlet, Klitdalen (in downs) (H. & K.)!

* **integrifolia** (M. Vahl) Hartz l. c.

Northern inlet-part: Polhem Dal (H. & K)! Röhs Fjord (D.)! Franz Joseph Fjord (D.)!
Southern inlet-part: Röde Ö, Hjörnedal, Danmarks Ö (H.)!

f. *intermedia* Natth.

Only found in Scoresby Sund from Danmarks Ö, Hjörnedal (H.)!

2. Potentilla pulchella R. Br.

Lge. Consp. p. 4 & 234. Buchenau & Focke l. c. Hartz Fanerog. p. 320. Dusén Gefässpfl. p. 14.

f. *humilis* Lge.

Northern coast-part: Common.
Pendulum Ö (D.)! Sabine Ö (D. H. & K.)! Dr. Augusta Dal (D.)! Kap Borlase Warren (D. H. & K.)! Clavering Ö (C. & P. D.)!
Scoresby Sund: Jameson Land (H.)!
The Kap Dalton-part: Turner Sund (H. & K.)!

f. *elatior* Lge.

Jameson Land (H. & K.)! Hurry Inlet (D. H. & K.)!

3. Potentilla maculata Pour.

Lge. Consp. Fl. Grœnl. p. 6 & 234. Hartz Fanerog. p. 321. Dusén Gefässpfl. p. 14.

a. vulgaris Lge.

Northern coast-part: Sabine Ö (H. & K.)! Clavering Ö (A. G. N.)!
Northern inlet-part: Fleming Inlet (H. & K.)!
Southern inlet-part: Hurry Inlet (D.)! Vardekløft (H. & K.)! common in Scoresby Sund (H.)!

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Kap Dalton-part: Turner Sund (H. & K.)!
Southern coast-part: common, yet not collected between 69°30′ and 67°.

f. *hirta* Lge.

Turner Sund (H. & K)! Kap Warming (K.)!

f. *debilis* Lehm.

Jameson Land (H.)!

f. *gelida* (C. A. Mey.) Hartm.

Danmarks Ö, Nordvestfjord (H.)!

4. **Potentilla emarginata** Pursh.

Lge. Consp Fl. Grœnl. p. 8 & 235. Buchenau & Focke l. c. Hartz Fanerog. p. 322. Dusén Gefässpfl. p. 14. (Pot. fragiformis v. pariflora Trautv.)

Northern coast-part: Pendulum Ö (D.)! Sabine Ö (all travellers), Hvalros Ö (D.)! Kap Borlase Warren (H. & K.)! Hold with hope (H.)!
Northern inlet-part: Scott Keltic Ö, Antarctic Havn (A. G. N.)!
Scoresby Sund: Common.
Kap Dalton-part: Kap Dalton, Turner Sund (H. & K.)!

5. **Potentilla nivea** L.

Lge. Consp. p. 8 & 235. Buchenau & Focke l. c. Hartz Fanerog. p. 322. Dusén Gefässpfl. p. 15.

Common everywhere between 74°30′ and 69°30′, collected by all travellers.

v. *subguinata* Lge.

Northern coast-part: Hold with hope (H.)!

v. *subviridis* Lehm.

Scoresby Sund: Gaaseland (H.)!

6. **Sibbaldia procumbens** L.

Lge. Consp. p. 11 & 236. Hartz Fanerog. p. 322. Dusén Gefässpfl. p. 15.

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Northern inlet-part: Fleming Inlet 71°40′, Pingels Dal 71°38′ (H. & K.)!
Scoresby Sund: Rather common, Gaaseland, Nordvestfjord, Danmarks Ö, Jameson Land (H.)! Hurry Inlet (D.)! Hurry Inlet Klöften (H. & K.)!
Kap Dalton-part: Kap Dalton, Turner Sund (H. & K.)!
Southern coast-part: Common on the coast south of 69°30′, noted in all localities. Kap Irminger, Skærgaards Halvöen, N.-Aputitek (A.)!

7. **Alchimilla glomerulans** Bus.

Alchimilla vulgaris L. Hartz Fanerog. p. 322. Lge. Consp. p. 11 & 237 ex parti.

The specimens collected by Hartz in Gaaseland belong all to this form of A. vulg. that more to the southward of the east-coast is very common. In no localities visited in 1899 and 1900 this considerable species was found, and only south of 66°20′ it becomes common.

Fam. 2. Halorrhagidaceae.

8. **Hippuris vulgaris** L.

Lge. Consp. Fl. Grœnl. p. 13, Rosenv. Till. p. 658. H. vulg. β maritima. Hartz Fanerog. p. 323. Dusén Gefässpfl. p. 15.

Up to 40 ctm. high, strong; in ponds in the interior.

Scoresby Sund: Danmarks Ö, Röde Ö, Renodde (H.)! Hurry Inlet (A. G. N.)!

f. *maritima* (Hellen) Hartm. non Lge.

Liverpool Kyst, Ryders Dal, Ulveodde (H. & K.)! Jameson Land near Nordostbugt (H. & K.)! 15—30 ctm. high.

The present form especially remarkable by the short leaves (air-leaves smaller than 10^{mm}, water-leaves up to 5^{mm}) and whorls, small in number (up to 8 leaves), passes smoothly into the main form without distinct limits. It is found in small pools with shallow water (under 30 ctm.) that during the summer are liable to drying up.

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Fam. 3. Callitrichaceae.

9. **Callitriche verna** L. *β* **minima** Hoppe.

Lge. Consp. p. 14 & 238. Hartz Fanerog. p. 323.

Scoresby Sund: In lakes and pools in Danmarks Ö and Röde O.

Fam. 4. Oenotheraceae.

10. **Epilobium anagallidifolium** Lam.

Hausskn. Monograph p. 152. Rosenv. Til. p. 659. Dusén Gefässpfl. p. 16. E. alpinum. Lge. Consp. p. 14 & 238.

Scoresby Sund: In the interior of Hurry Inlet (D.)! Vardeklöft in herby slopes (H. & K)! Ulveodde (H. & K.)!

Up to 10 ctm. high, grows most often socially on humid, sandy slopes round brooklets, where the coat of snow is strong, and may here be coverforming on areas of the size of one □ fathom (4 □ M.).

11. **Chamaenerium latifolium** (L.) Spach.

Lge. Consp. Fl. Grœnl. p. 16 & 239. Hartz Fanerog. p. 323. Dusén Gefässpfl. p. 16.

On steep slopes in the table-land, often snowless (H.)!

Common in North-East Greenland between 75° and 69°25′ (Sabine, Scoresby, C. & P., H., D., H. & K.). In Scoresby Sund as far as 2200′ above the level of the sea (H.)! In the southern coast-belt only scarce. Kap Vedel (A.)! Lilleö (K.)! Vahls Fjord (K.)!

f. *stenopetala* Hausskn. Monogr. p. 191.

Scoresby Sund: Common in Danmarks Ö (H.)!
Southern coast-part: Skærgaards Halvöen (A.)!

f. *parviflora* Hartz l. c.

Only found in Röde Ö (H.)!

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Fam. 5. Empetraceae.

12. Empetrum nigrum L.

Lge. Consp. p. 18 & 240. Buchenau & Focke l. c. Hartz Fanerog. p. 324. Dusén Gefässpfl. p. 16.

Here and there.

Northern coast-part: Kuhns Ö (C. & P.)! Sabine Ö (H. & K.)! Mackenzie Bugt (C. & P.)! Clavering Ö (D.)!

Northern inlet-part: Scott Keltic Ö (D.)! Forsblad Fjord (D. H. & K.)! Röhs Fjord (D.)! Kap Parry, Antarctic Havn (D.)!

Scoresby Sund: Here and there, but not common (H.)! Jameson Land common (H. & K.)! Hurry Inlet common (D. H. & K.)!

Kap Dalton-part: Kap Dalton, Turner Sund rather rare (H. & K.)!

It is collected in all visited localities south of 69°30′.

It is nowhere except in Jameson Land formation or cover-forming north of 69° and seeches most often shelter against the predominant winds. It is most often hermophroditic and is in several places observed with ripe fruit.

Fam. 6. Caryophyllaceae.

13. Silene acaulis L.

Lge. Consp. p. 19 & 241. Buchenau & Focke l. c. Hartz Fanerog. p. 324. Dusén Gefässpfl. p. 17.

Common everywhere between 75° and 66°20′, observed by all travellers and in all localities. The tufts reach a diameter of 30—40 ctm. and a height of 7—10 ctm., but the wind-ward is often eroded or dead, so that the tuft has the form of a horse-shoe.

f. *albiflora* Lge.

Not rare in humid localities in Scoresby Sund (H.)!

14. Viscaria alpina (L.) Don.

Lge. Consp. p. 19 & 241. Hartz Fanerog. p. 324.

In thickets and herby slopes, snowcovered in winter, up to 15 ctm. high. Common in the interior of Scoresby Sund: Dan-

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marks Ö, Gaaseland, Röde Ö, Vestfjord (H.)! but else it is not observed anywhere north of 66° 20′ lat. N.

15. **Melandrium apetalum** (L.) Fzl.

Lge. Consp. p. 19 & 241. Buchenau & Focke l. c. Hartz Fanerog. p. 324. Dusén Gefässpfl. p. 18.

In table-land.

Northern coast-part: Common, observed by all travellers.
Northern inlet-part: Kap Franklin, Bontekoe Ö, Scott Keltic Ö. Antarctic Havn.
Scoresby Sund: Not common. Jameson Land, Gaaseland (H.)! Hurry Inlet, Ryders Dal in downs, Liverpool Kyst (H. & K.)!
Southern coast-part: Kap Dalton, Turner Sund (H. & K.)!

The species has not been observed south of 69°30′.

16. **Melandrium involucratum** (Cham. & Schld.) *β* **affine** (J. Vahl) Rohrb.

Lge. Consp. p. 20 & 241. Buchenau & Focke l. c. Hartz Fanerog. p. 324. Dusén Gefässpfl. p. 18.

In heath and table-land.

Observed by all travellers between 75° and 69°30′ and in all localities on the coast. It appears according to Dusén l. c. less frequently in the northern inlet-part, while it is common in Scoresby Sund. It has not been collected south of 69° 30′.

17. **Melandrium triflorum** (R. Br.) Vahl.

Lge. Consp. p. 20 & 241. Buchenau & Focke l. c. Hartz Fanerog. p. 325. Dusén Gefässpfl. p. 18.

In heath and table-land. Here and there between 65° and 70°.

Northern coast-part: Common, observed by all travellers.
Northern inlet-part: Common.
Scoresby Sund: Rather common, Jameson Land, Danmarks Ö a. o. plac. (H.)! Kap Stewart (D.)! Hurry Inlet (A. G. N.) Klitdalen (H. & K.)!

The species has a more northern extension than the preceding one; its southern limit is a little more northern, to which also the

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apparent disagreement of the statements of its frequency in Hartz and Dusén is proportionate.

18. **Sagina Linaei** Presl.

Lge. Consp. p. 21 & 242. Hartz Fanerog. p. 325.

Northern inlet-part: Kap Seaforth (H. & K.)!
Scoresby Sund: Jameson Land (H.)!
Southern coast-part: Skærgaards Halvöen (A.)!

19. **Sagina nivalis** (Lindbl.) Fr. ex pterte.

Lge. Consp. p. 22 & 242.

Northern coast-part: Sabine Ö, Kap Borlase Warren (H. & K.)!
Kap Dalton-part: Turner Sund (H. & K.)!
Southern coast-part: The gulf south of Storbræ, Nordre-Aputitek (A.)!

20. **Sagina caespitosa** (J. Vahl) Lge.

Lge. Consp. p. 21 & 242. Hartz Fanerog. p. 325.

Northern coast-part: Kap Borlase Warren (H. & K.)!
Scoresby Sund: Jameson Land (H.)!

21. **Alsine biflora** (L.) Wbg.

Lge. Consp. p. 23 & 243. Buchenau & Focke l. c. Hartz Fanerog. p. 325. Alsine triflora Dusén Gefässpfl. p. 19.

Rather common between 74°30′ and 66°20′ especially on the coast, but also in the interior it is found extended especially in the southern part.

f. *flor. lilacinis* Hartz l. c.

Northern inlet-part: Kap Seaforth, Canning Land (H. & K.)!
Scoresby Sund: Danmarks Ö, Gaaseland (H.)!

22. **Alsine stricta** (Sw.) Wbg.

Lge. Consp. p. 25 & 243. Hartz Fanerog. p. 326.

Scoresby Sund: Gaasefjord (H.)!

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23. **Alsine verna** Bartl.

Lge. Consp. p. 24 & 243. Buchenau & Focke l. c. Hartz Fanerog. p. 325. Alsine rubella Wbg. Dusén Gefässpfl. p. 19.

β. rubella (Wbg.) Lge.

Northern coast-p.: Pendulum Ö (D.)! Sabine Ö (all travellers)! Hvalros Ö (D.)! Kap Borlase Warren (H. & K)! Hold with hope (H. D.)! Kap Bror Ruys (C. & P.)! Mackenzie Bugt (Gr.)!

Northern inlet-p.: Moskusoxefjord (Gr.)! Geolog Fjord (D.)! Franz Joseph Fjord (C. & P.)! Kjerulf Fjord (D.)! Forsblad Fjord (A. G. N.)! Kap Seaforth (H. & K.)! Canning Land at Kap Fletcher (H. & K.)!

Scoresby Sund: Jameson Land (H.)! Kap Brewster (H. & K)! Hurry Inlet (H. & K. D.)! Kap Stewart (D.)!

Southern coast-p.: Kap Dalton (H. & K.)!

γ. hirta (Wormsk.) Lge.

Kap Borlase Warren (H. & K.)!

Scoresby Sund: Common in dry thickets (H.)! Hurry Inlet, Liverpool Kyst (H. & K.)!

Kap Dalton-p.: Turner Sund (H. & K.)!

δ. propinqua (Richards) Lge.

Northern inlet-p.: Kap Brown (H. & K.)!

Scoresby Sund: In the interior of Scoresby Sund: Röde Ö, Kobberpynt (H.)!

Kap Dalton-p.: Turner Sund (H. & K.)!

24. **Halianthus peploides** (L.) Fr. var. **diffusa** Hornem.

Lge. Consp. p. 26 & 243. Buchenau & Focke l. c. Hartz Fanerog. p. 326. Dusén Gefässpfl. p. 20.

Northern coast-p.: Sabine Ö (H. & K.)! Lille Pendulum Ö (D.)! Clavering Ö (C. & P. Akerbl.)! Kap Borlase Warren (C. & P.)!

Northern inlet-p.: Franz Joseph Fjord (A. G. N.)! Kjerulf Fjord (D.)! Forsblad Fjord (D. H. & K.)! Canning Land (H. & K.)!

Scoresby Sund: Common in the interior inlets west of Hurry Inlet (D.)!

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25. **Arenaria ciliata** L. β **humifusa** (Wbg.).

Lge. Consp. p. 27 & 243. Buchenau & Focke l. c. Hartz Fanerog. p. 326. Dusén Gefässpfl. p. 20.

Northern coast-p.: Common, noted by all travellers, especially in Sabine Ö a very predominant character plant in the lower parts.
Northern inlet-p.: Franz Joseph Fjord (C. & P.)! Sophia Stræde (A. G. N.)! Fleming Inlet, Kap Seaforth, Canning Land (H. & K.)!
Scoresby Sund: Jameson Land, Gaaseland (H.)! Hurry Inlet (D.)! Klitdalen, Vardeklöft, Pt. Constable, Liverpool Kyst (H. & K.)!
Kap Dalton-p.: Turner Sund, common in the lowland, Kap Dalton (H. & K.)!

The species has not been found south of 69° 30′ lat. N.

26. **Stellaria humifusa** Rottb.

Lge. Consp. p. 28 & 244. Buchenau & Focke l. c. Hartz Fanerog. p. 326. Dusén Gefässpfl. p. 20.

Northern coast-p.: Common, Sabine Ö (all travellers)! Kap Borlase Warren (D. H. & K.)!
Northern inlet-p. Bontekoe Ö, Scott Keltic Ö, Forsblad Fjord (D.)! Kap Seaforth (H. & K.)!
Scoresby Sund: Danmarks Ö, Jameson Land (H.)! Hurry Inlet common (D. H. & K.)!
Kap Dalton-p.: Turner Sund, Dunholm (H. & K.)!
Not found between 69° 30′ and 66° 20′.

The species lives in flats of clay and sand near the beach together with Glyceria maritima f. vilfoidea and Carex glareosa and seems to prefer the outer coast in contradistinction from what is the case south of 66° lat. N.

27. **Stellaria longipes** Goldie.

Lge. Consp. p. 29 & 244. Buchenau & Focke l. c. Hartz Fanerog. p. 326. Dusén Gefässpfl. p. 21.

Common everywhere between 74° 30′ and 69° 30′ and noted by all travellers, not found on the coast more to the south.

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28. **Cerastium trigynum** Vill.

Lge. Consp. p. 30 & 244. Hartz Fanerog. p. 326.

Northern inlet-p.: Fleming Inlet 71°40′ in humid places (H. & K.)!
Scoresby Sund: Common, especially east of Danmarks Ö (H.)!
Hurry Inlet, Jameson Land, common (H. & K.)!
Kap Dalton-p.: Turner Sund, Kap Dalton (H. & K.)!
Southern coast-p.: Kap Vedel, Kap Irminger, Skærgaards Halvöen, N.-Aputitek (A.)!

Commonly extended south of 67°20′.

The species is stated among the plants found by Sabine, but has not been refound by any later traveller in the places visited by S. (Pendulum Öer?). This uncommonly northern locality must therefore be omitted as uncertain, as it is not precisely stated where the specimens were collected.

It likes humid places: pools, the banks of brooklets, herby slopes and the borders of perennial snow-drifts, but is also found in the table-land, in places where there is water in spring. It thrives on the southern coast especially in and round Eskimau ruins where it forms a thick cover.

29. **Cerastium alpinum** L.

Lge. Consp. p. 31. Buchenau & Focke l. c. Hartz Fanerog. p. 327 ex parte. Dusén Gefässpfl. p. 20.

α. legitimum Lindbl.

Not rare and found in numerous localities between 74°30′ and 69°30′.

β. lannatum Lindbl.

Commonly extended everywhere in East Greenland in all forms of vegetation and as well on the coast as in the interior.

γ. procerum Lge.

Northern inlet-p.: Moskusoxefjord (Gr.)!
Scoresby Sund: Gaaseland, Danmarks Ö (H.)!

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30. **Cerastium Edmonstonii** (Watson) Murb. & Ostenf. var. **caespitosum** (Malmgr.) Dusén Gefässpfll. p. 22.

Cerastium arcticum Lge. p. ex part. Cerastium alpinum L. v. caespitosum Malmgren. Hartz Fanerog. 327. Cerast. latifolium Hooker in Scoresby: Journal p. 413.

Northern coast-p. Sabine Ö! Lille Pendulum Ö! Clavering Ö (D.)! Hold with hope (H.)!
Northern inlet-p.: Fleming Inlet, Kap Seaforth (H. & K.)!
Scoresby Sund: Hurry Inlet (D.)!
Kap Dalton-p.: Turner Sund (H. & K.)!

I have within this species classed only specimens undoubtedly corresponding with Malmgren's C. alp. v. caespit., as it appears to me that the limits drawn by Murbeck round C. Edmonstonii are so wide that it enters into the domain of C. alpinum. Malmgren's var. (C. arcticum) is on the other hand a form very characteristic and easily recognizable in East Greenland, and it cannot be confounded with C. alp., at any rate not when it is seen in nature. Its appearance in flats of sand and clay distinguishes this plant from the above-named species that lives on rocks.

Fam. 7. Cruciferae.

31. **Lesquerellia arctica** (Richards) Watson.

Hartz Fanerog. p. 327. Dusén Gefässpfl. p. 22. Vesicaria arctica R. Br. Lge. Consp. p. 34 & 246.

Northern coast-p.: Dronning Augusta Dal (A. G. N.)!
Northern inlet-p.: Franz Joseph Fjord (C. & P.)! Mackenzie Bugt (Gr. D.)! Ruth Ö (A. G. N.)! Sophia Stræde (A. G. N.)! Röhs Fjord (D.)! Forsblad Fjord (D. H. & K.)!
Scoresby Sund: Jameson Land, Röde Ö, Vestfjord and several places, common (H.)! Hurry Inlet (D.)! Klitdalen in flats of sand and clay, and in plains of stone, Fame Öer (H. & K.)!

During the flowering the numerous flower-stalks are ascending, but then they straighten themselves fitting tightly to the field until the fruit is ripe. Then they again bend upwards rising the siliques 4—6 ctm. above the ground.

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32. **Cochlearia officinalis** L.

Gelert i G. Anderson & H. Hesselman Spetsbergens Kärlväxtflora, Bihang till K. Sv. Vetensk. Akad. Handl. Bd. 26. Afd. III. Nr. 1. p. 34.

The folloving forms of this variable species we have seen from the territory.

β. groenlandica Gelert.

Dusén Gefässpfl. p. 23. C. Grœnlandica L. Lge. Consp. p. 35 ex parte. C. fenestrata R. Br. Hartz Fanerog. 327 ex parte. Buchenau & Focke l. c. Coclearia anglica Scoresby Journal.

Northern inlet-p.: Kap Bennet (D.)! Kap Seaforth.
Kap Dalton-p.: Kap Dalton, Dunholm (H. & K.)!

f. *minor* (Lge.) Gelert.

Northern coast-p.: Hvalros Ö, Lille Pendulum Ö (C. & P., H. & K.)!
Kap Borlase Warren (H. & K.)! Hold with hope (H.)!
Scoresby Sund: Jameson Land, Danmarks Ö (H.)!
Kap Dalton-p.: Turner Sund (H. & K.)!
Southern coast-p.: Kap G. Holm (K.)!

β. oblongifolia (D. C.) Gelert.

C. fenestrata (R. Br.). Hartz l. c. ex parte.

Northern coast-p.: Lille Pendulum Ö (D.)! Hvalros Ö (Gr.)!
Northern inlet-p.: Murrays Ö (D.)!
Scoresby Sund: Hurry Inlet (D.)! Jameson Land in Moskær (H.)!
Kap Dalton-p.: Turner Sund, Kap Dalton (H. & K.)!

No one of the forms is frequent, they keep mostly near the coast of the sea and are found there almost exclusively in manured spots, ruins, fowling cliffs and islets, and gull hillocks; its scarce appearance is certainly due to the spread population of Eskimaux disappeared long ago and the insignificant birdlife.

33. **Draba alpina** L.

Lge. Consp. p. 37 & 247. Buchenau & Focke l. c. Hartz Fanerog. p. 328. Dusén Gefässpfl. p. 24. Dr. leptotala Dusén l. c.

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Commonly extended between 69° 20′ and 74° 30′. The main form is very easily recognizable on account of the strongly yellow flowers, dark stalks and very thick and coarse hairy coat in stars. The hairiness of the capsule is very variable also in the same individual, so that it is scarcely possible to base a systematical distinction on this circumstance. The forms mentioned by Dusén with white petals belong to Draba Fladnizensis.

β. glacialis (Kjellm.) Gelert.

Northern coast-p.: Sabine Ö (H. & K.)! Kap Borlase Warren (H. & K)!
Scoresby Sund: Danmarks Ö, Jameson Land, Gaaseland (H.)!

γ. oblongata (R. Br.) Gel.

Dr. leptopetala Dusén (non Th. Tr.) l. c.

Hold with hope (A. G. N.)!

34. **Draba glacialis** Adams.

Gelert Notes on arctic Plants Bot. Tidsskr. Bd. 21. 3. H. p. 294. Dr. Martinsiana I Gay Dusén Gefässpfl. p. 26.

β. aspera (Adams) Gelert.

Northern coast-p.: Lille Pendulum Ö (D.)! Sabine Ö (D.)!

γ. stenopetala Trautv.

Northern coast-p.: Lille Pendulum Ö (D.)!

35. **Draba crassifolia** Grah.

Lge. Consp. p. 38 & 247. Hartz Fanerog. p. 328. Dusén Gefässpfl. p. 25.

Northern coast-p.: Hold with hope (H.)!
Scoresby Sund: Jameson Land, Gaaseland, Danmarks Ö, Nordvestfjord (H.)! Kap Stewart (D.)!
Kap Dalton-p.: Kap Dalton (H. & K)!

Likes humid localities, and seeks shelter between stones or higher vegetation in herby or grassy slopes or river-beds.

36. **Draba aurea** M. Vahl.

Lge. Consp. p. 39 & 247. Hartz Fanerog. p. 328.

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Scoresby Sund: Common in the interior. Danmarks Ö, Gaaseland, Röde Ö, Nordvestfjord o. fl. St. (H.)!
Southern coast-p.: Kap Warming (K.)!

This considerable species shuns the outer coast preferring dry, gravelly localities exposed to the south high on the mountains in the interior of the country; it is therefore possibly far more extended than it appears from the above-named few localities, but has hitherto avoided the investigations.

37. **Draba repens** M. v. Bieb.

Dusén Gefässpfl. p. 23.

Scoresby Sund: Hurry Inlet (A. G. N)! Ryders Dal, Point Constable (H. & K.)!

Grows socially and colours large spots beautifully yellow, prefers humid table-land, the banks of half dried pools and sandy ground. It excludes almost all other plants from its habitat, but still it forms no complete cover, the ascending stalks being leafless on the whole of the lower part.

38. **Draba nivalis** Liljeb.

Lge. Consp. p. 39 & 248. Buchenau & Focke l. c. Hartz Fanerog. p. 328. Dusén Gefässpfl. p. 26. Draba arctica Dusén l. c. ex parte.

Northern coast-p.: Sabine Ö (all travellers). Kap Borlase Warren (H. & K.)! Mackenzie Bugt (Gr.)!
Northern inlet-p.: Canning Land (H. & K.)!
Scoresby Sund: Common (H.)! Hurry Inlet (D.)!
Kap Dalton-p.: Kap Dalton, Turner Sund (H. & K.)!
Southern coast-p.: Lilleö, Vahls Fjord (K.)!

39. **Draba Fladnizensis** Wulf.

Gelert Notes on arctic plants. Bot. Tidsskr. 21. Bd. 3. H. p. 302. Dr. Wahlenbergii Hartm. Lge. Consp. Fl. Grœnl. p. 40 & 248. Hartz Fanerog. p. 328. Dusén Gefässpfl. p. 25. Buchenau & Focke l. c. Dr. muricella B. & F. l. c. D. rupestris f. parva B. & F. D. altaica (Led.) Hartz l. c.

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This very variable, but yet rather easily recognizable species appears in many forms, size and hairiness varying very considerably; it possibly comprises several species, but we have not been able to acknowledge this with the material in hand where the different forms pass evenly into each other. I class within this all white-flowered, ciliate short-ribbed individuals. It is rather commonly extended in all formations over the coast, yet decreasing distinctly in number and size towards the North where it is displaced by D. alpina from which certain forms cannot be distinguished when sterile or having done flowering. In the southern part of the coast-region it is very common also in the interior.

Northern coast-p.: Lille Pendulum Ö (D.)! Sabine Ö (H. & K.)! Clavering Ö (C. & P. D.)! Kap Borlase Warren (H. & K.)! Hold with hope (H.)!
Northern inlet-p.: Mackenzie Bugt (Gr.)! Kap Seaforth (H. & K.)!
Scoresby Sund: Gaaseland, Danmarks Ö, Jameson Land a. o. places (H.)! Hurry Inlet (H. & K.)!
Kap Dalton-p.: Turner Sund, Kap Dalton (H. & K.)!
Southern coast-p.: N.-Aputitek, Storbræ (A.)! Vahls Fjord (K.)!

40. **Draba hirta** L.

Lge. Consp. Fl. Grœnl. p. 42. Buchenau & Focke l. c. Hartz Fanerog. p. 329. Dusén Gefässpfl. p. 25. D. rupestris C. & P. D. D. corymbosa R. Br. Hartz l. c.

Rather common everywhere in Northeast Greenland and noted by all travellers. Varies very much, but the forms cannot be kept distinct.

41. **Draba arctica** J. Vahl.

Lge. Consp. Fl. Grœnl. p. 43. Buchenau & Focke l. c. Hartz Fanerog. p. 329. Dusén Gefässpfl. p. 26.

Commonly extended between 69°30′ and 75° lat. N., observed by all travellers; between 66°20′ and 69° it has not been observed.

42. **Braya purpurascens** (R. Br.) Bunge. f. **siliculis glabris** Hartz.

Braya glabella Lge. Consp. p. 46 & 250. Hartz Fanerog. p. 329. Dusén Gefässpfl. p. 26. Platypetalum purpurascens R. Br.

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Northern coast-p.: Sabine Ö, Kap Borlase Warren (H. & K.)! Dronning Augusta Dal (A. G. N.)! Clavering Ö (D.)!
Northern inlet-p.: Franz Joseph Fjord (D.)! Moskusoxefjord (Gr.)! Ruth Ö (A. G. N.)! Kap Seaforth (H. & K.)!
Scoresby Sund: Jameson Land (H.)! Fame Öer (A. G. N. H. & K.)! The downs in Ryders Dal (H. & K.)!

In sandy or clayey-sandy flats. Bears rather well sand-drift.

43. **Braya alpina** Sternb. & Hoppe.

Hartz Fanerog. p. 329. Dusén Gefässpfl. p. 27. Braya glabella Richards non Lge. & Hartz. Arabis petræea Buchenau & Focke l. c.

Northern inlet-p.: Franz Joseph Fjord (B. & F. D)! Ruth Ö (A. G. N.)!
Scoresby Sund: Fladepynt in Vestfjord, Kingua Gaasefjord (H.)! Hurry Inlet, Ryders Dal in stony plains and in downs (H. & K.)!

In the interior of the country in sandy flats and in downs. Sets ripe fruit in abundance.

44. **Eutrema Edwardsii** R. Br.

Dusén Gefässpfl. p. 27.

Northern coast-p.: Mackenzie Bugt (Gr.)!

45. **Cardamine bellidifolia** L.

Lge. Consp. Fl. Grœnl. p. 47 & 251. Buchenau & Focke l. c. Hartz Fanerog. p. 329. Dusén Gefässpfl. p. 27.

Northern coast-p.: Sabine Ö (all travellers)! Lille Pendulum Ö (C & P., A. G. N.)! Hvalros Ö (G.)! Kap Borlase Warren (D.)! Clavering Ö (D.)! Hold with hope (H., D.)!
Northern inlet-p.: Scott Keltic Ö (D.)! Kap Greg (H. & K.)!
Scoresby Sund: Common. Kap Tobin (H. & K.)!
Kap Dalton-p.: Turner Sund, Kap Dalton (H. & K.)!
Southern coast-p.: Kap Vedel, N.-Aputitek (A)! Jagos Fjord, Kap Warming, Lilleö, Itivsalik (K.)!

var. *laxa* Lge.

Kap Dalton (H. & K.)!

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The main species is found spread in heath, table-land and pools and is commonly extended; it likes humid cracks in the rocks and is certainly often snowless in winter.

46. Cardamine pratensis L.

Lge. Consp. p. 48 & 251. Hartz Fanerog. p. 329. Dusén Gefässpfl. p. 27.

Northern coast-p.: Mackenzie Bugt (G.)! Kap Seaforth (H. & K.)!
Scoresby Sund: Jameson Land, Danmarks Ö (H.)! Nordvestbugt, Liverpool Kyst, Hurry Inlet (H. & K.)!

Is as a rule sterile and propagates only by the deciduous leaflets. This form is strongly hydrophile and is most often found submerse in smaller puddles and pools; but it appears also in more dry, sandy localities with flower, but without any seed in the thin stunted siliques. The species sets certainly never in these regions seeds that have the power of germination.

47. Arabis alpina L.

Lge. Consp. p. 48 & 251. Hartz Fanerog. p. 330. Dusén Gefässpfl. p. 28.

Northern inlet-p.: Fleming Inlet (H. & K.)! 71°40′ lat. N.
Scoresby Sund: Common (H.)! Kap Stewart (D.)! Hurry Inlet (A. G. N.)! Vardeklöft, Liverpool Kyst and several places (H. & K.)!
Kap Dalton-p.: Turner Sund, Kap Dalton (H. & K.)!
Southern coast-p.: Kap Irminger (A.)! Kap Warming (K.)!

The species appears in several forms, partly as low, 3—5 ctm. high peduncles and 0·5—1 ctm. long leaves in 1—2 ctm. broad rosettes (f. *minor* Lange), partly in more or less hairy forms however connected by transitions (Hartz f. *glabrata*). A specimen of (Lange f. *ruderalis*) has been observed at Kap Stewart.

48. Arabis Holboellii Hornem.

Hartz Fanerog. p. 330.

Scoresby Sund: Common in the interior, Gaaseland, Röde Ö, Vestfjord (H.)!

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Kap Dalton-p.: Turner Sund (H. & K.)!

In gravelly and stony slopes and in dry thickets, is not found in the coast region.

Fam. 8. Papaveraceae.

49. Rapaver radicatum Rottb.

Hartz Fanerog. p. 330. Dusén Gefässpfl. p. 41. P. nudicaule. Lge. Consp. p. 52 & 253. Buchenau & Focke l. c.

Common everywhere between 75° and 69°30′. It appears especially in the northern coast part (Sabine Ö) in incredible numbers and in unusually strong tufts; on a single tuft Hartz counted 38 full-blown flowers and 34 large buds. On the top of Harefjæld and in humid ground at Germania Havn the white-flowered form was very frequent. In the southern part (Scoresby Sund and the Kap Dalton part) the white-flowered form is more rare. South of 69°30′ the species is very rare and only found in few places, Kap Vedel, Storbræ (A.)! Langö, Jagos Fjord (K.)!

f. *pygmæa* Hartz.

5—10 ctm. high.

Northern coast-p.: Hold with hope (H.)!
Scoresby Sund: Danmarks Ö (H.)!

f. *glabriuscula* Hartz.

Foliis læte viridibus, parce hirsutis, ad P. nudicaule L. (P. croceum Ledeb.) accedens.

Scoresby Sund: Jameson Land (H)!

Fam. 9. Ranunculaceae.

50. Thalictrum alpinum L.

Lge. Consp. p. 53 & 253 (Hartz Fanerog. p. 231. Dusén Gefässpfl. p. 29.

Northern inlet-p.: Fleming Inlet 71°40′ (H. & K.)!
Scoresby Sund: Gaaseland, Danmarks Ö, Kingua Gaasefjord, not

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common (H.)! Hurry Inlet (D. H. & K.)! Kap Dalton (H. & K.)! Not found between 69°30′ and 66°20′.

In herby and grassy slopes in humid sheltered places, snow-covered in winter.

51. **Batrachium paucistamineum** (Tausch.) var. **eradicata** (Læst.).

Gel. Bot. Tidsskr. Bd. 19, p. 28.

Scoresby Sund: Danmarks Ö (H.)! Nordostbugt (H. & K.)! Hurry Inlet (Arfvidson)! The specimens are all together sterile.

In pools and small, shallow puddles, very rare.

52. **Ranunculus glacialis** L.

Lge. Consp. p. 54 & 254. Buchenau & Focke l. c. Hartz Fanerog. p. 331. Dusén Gefässpfl. p. 29.

Common on the coast in the whole examined region and noted by all travellers, but not observed in the interior of the inlets. Is wanting in Scoresby Sund (H.)! The flowers vary very much in colour, partly according to their age (from purple to almost white). Sets seeds in abundance.

53. **Ranunculus pygmaeus** Wbg.

Lge. Consp. p. 55 & 254. Buchenau & Focke l. c. Hartz Fanerog. p. 331. Dusén Gefässpfl. p. 30.

Northern coast-p.: Lille Pendulum Ö (C. & P.)! Sabine Ö (H. & K.)! Hold with hope (H.)!
Northern inlet-p.: Jackson Ö (C. & P.)! Mackenzie Bugt (Gr.)! Scott Keltic Ö (A. G. N.)! Kap Seaforth, Fleming Inlet (H. & K.)!
Scoresby Sund: Common (H.)!
Kap Dalton-p.: Kap Brewster, Turner Sund, Kap Dalton (H. & K.)!
Southern coast-p.: Common everywhere (A., K.)!

var. *Langeana* Nath.

Northern inlet-p.: Fleming Inlet (H. & K.)!
Scoresby Sund: Gaaseland, Danmarks Ö (H.)! Hurry Inlet (H. & K.)! Kap Dalton (H. & K.)!

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As well the main species as var., among which transitions are found, grow in humid places and are common on the whole of the coast, flowers and sets seeds in abundance.

54. **Ranunculus hyperboreus** Rottb.

Lge. Consp. p. 55 & 254. Hartz Fanerog. p. 331. Dusén Gefässpfl. p. 30.

Northern coast-p.: Hvalros Ö (D.)! Sabine Ö (A. G. N. H. & K.)! Kap Borlase Warren (D. H. & K.)!
Northern inlet-p.: Antarctic Havn (A. G. N.)! Kap Seaforth (H. & K.)!
Scoresby Sund: Kap Stewart, Danmarks Ö, Kingua Gaasefjord (H.)! Hurry Inlet (D. H. & K.)!
Kap Dalton-p.: Kap Dalton (H. & K.)!

In shallow ponds and pools, most often sterile. Rather rare.

55. **Ranunculus nivalis** L.

Lge. Consp. p. 56 & 254. Buchenau & Focke l. c. Hartz Fanerog. p. 331. Dusén Gefässpfl. p. 30.

Northern coast-p.: Lille Pendulum Ö (C. & P. A. G. N.)! Sabine Ö, Kap Borlase Warren (H. & K.)! Hold with hope (H.)!
Northern inlet-p.: Mackenzie Bugt (Gr.)! Kap Seaforth (H. & K.)! Fleming Inlet (H. & K.)!
Scoresby Sund: Jameson Land, Danmarks Ö (H.)! Hurry Inlet (H. & K.)!
Kap Dalton-p.: Kap Brewster, Kap Dalton (H. & K.)!

56. **Ranunculus altaicus** Laxm.

Lge. Consp. p. 56 & 254. Buchenau & Focke l. c. Hartz Fanerog. p. 332. Dusén Gefässpfl. p. 30.

Northern coast-p.: Sabine Ö (all travellers)! Lille Pendulum Ö (D.)! Kap Borlase Warren (H. & K. D)! Hold with hope (D.)! Clavering Ö (D.)! Jackson Ö, Kap Bror Ruys (C. & P.)!
Northern inlet-p.: Bontekoe Ö, Murrays Ö (D.)! Fleming Inlet, Kap Seaforth (H. & K.)!
Scoresby Sund: Jameson Land, Gaaseland, Danmarks Ö (H.)! Kap Stewart (D.)! Hurry Inlet (H. & K.)!

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57. **Ranunculus arcticus** R. Br.

Freyn in G. Anderson och H. Hesselman Bidrag till Spetsbergens och Beeren Eilands Karlväxtflora, Bihang t. Kgl. Sv. Vet. Acad. Handl. Bd. 26. Afd. III No. 1 p. 49. Dusén Gefässpfl. p. 31. R. affinis R. Br. Hartz Fanerog. p. 332.

Northern coast-p.: Sabine Ö (H. & K.)! Lille Pendulum Ö, Clavering Ö (D.)!
Northern inlet-p.: Franz Joseph Fjord (C. & P.)!
Scoresby Sund: Gaaseland (H.)!
Kap Dalton-p.: Kap Dalton (H. & K.)!

Var. **Willanderi** (Natt.) Freyn.
Kap Dalton (H. & K.)!

Fam. 10. Saxifragaceae.

58. **Saxifraga hieracifolia** Waldst. & Kit.

Lge. Consp. p. 59. Buchenau & Focke l. c. Hartz Fanerog. p. 332. Dusén Gefässpfl. p. 31.

Northern coast-p.: Kap Bror Ruys (C. & P.)!
Northern inlet-p.: Scott Keltic Ö, Forsblad Fjord (D.)! Fleming Inlet (H. & K.)!
Scoresby Sund: Jameson Land (H.)! At Nordostbugt, Hurry Inlet Klöften and several places on Liverpool Kyst (H. & K.)! Kap Brewster (H. & K.)!

In boggy pools and humid heath, not common in any of the examined localities except Jameson Land.

59. **Saxifraga nivalis** L.

Lge. Consp. Fl. Grœnl. p. 59. Buchenau & Focke l. c. Hartz Fanerog. p. 332. Dusén Gefässpfl. p. 31.

Common everywhere between 75° and 67° in all formations.

var. *tenuior* Wbg.

Has also been observed in several places, but keeps most to the coast.

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60. **Saxifraga stellaris** L. *β* **comosa** Poir.

Lge. Consp. Fl. Grl. p. 60. Hartz Fanerog. p. 332. Dusén Gefässpfl. p. 32.

Northern coast-p.: Sabine Ö (Sabine, H. & K.), Kap Borlase Warren (H. & K.)! Hold with hope (H.)! Lille Pendulum Ö (D.)!
Northern inlet-p.: Kap Greg (H. & K.)!
Scoresby Sund: Common.
Kap Dalton-p.: Common.

The main species has not been observed north of 67° lat. N., var. not south of 69° 25′ lat. N.

61. **Saxifraga cernua** L.

Lge. Consp. Fl. Grl. p. 61 & 256. Hartz Fanerog. p. 333. Dusén Gefässpfl. p. 32.

Commonly extended everywhere in pools, table-land, herby slopes, grassy slopes and heath. Snow-covered in winter.

var. *ramosa* Gmel.

Northern coast-p.: Hold with hope (H.)!
Scoresby Sund: Danmarks Ö (H.)! Kap Stewart, Kap Dalton (H. & K.)!

Is found in manured places as Greenland ruins, at places of residence and house-walls and is here often very robust, glandular-hairy and sticky.

62. **Saxifraga rivularis** L.

Lge. Consp. Fl. Grl. p. 61 & 256. Hartz Fanerog. p. 333. Dusén Gefässpfl. p. 33.

Commonly extended over the whole of the coast, but appears somewhat more rarely in the interior of the country, likes humid places as pools, cracks in the rocks and herby slopes.

β. purpurascens Lge. l. c.

Northern coast-p.: Hold with hope (H.)!
Scoresby Sund: Kap Brewster (H. & K.)!
Southern coast-p.: Turner Sund (H. & K.)!

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γ. var. *hyperborea* (R. Br.) Engl. Lge. l. c.

Northern coast-p.: Sabine Ö (H. & K.)! Mackenzie Bugt (Gr.)
Kap Dalton-p.: Turner Sund, Kap Dalton (H. & K.)!

63. **Saxifraga decipiens** Ehrh.

Lge. Consp. Fl. Grl. p. 62 & 257. Hartz Fanerog. p. 333. Saxifraga cæspitosa L. Dusén Gefässpfl. p. 33.

The species is found in the following forms:

α. *caespitosa* (L.) Engl.

Commonly extended everywhere between 75° and 67°, likes humid localities with shelter.

β. *uniflora* (R. Br.) Lge.

Northern coast-p.: Kap Borlase Warren (H. & K.)! Hold with hope (H.)!
Scoresby Sund: Gaaseland (H.)! Jameson Land (H. & K.)!
Kap Dalton-p.: Turner Sund, Kap Dalton (H. & K.)!
Southern coast-p.: Kap Vedel, Storbræ, Skærgaards Halvöen (A.)!

γ. *Sternbergii* (Willd.) Engl.

Kap Brewster (H. & K.)!

δ. *cryptopetala* Berlin. Kärlväxter insamlade under den svenska Expeditionen till Grönland 1883, Öfversigt af Kgl. Vet. Ak. Förh.

Northern inlet-p.: Kap Greg (H. & K.)!

64. **Saxifraga tricuspidata** Rottb.

Lge. Consp. Fl. Grl. p. 63.

Scoresby Sund: Hurry Inlet (H. & K.)!
Kap Dalton-p.: Turner Sund, Kap Dalton (H. & K.)!

The specimens are about 10 ctm. high, strong and have a few flowers; fruit has not been observed, but on the other hand numerous fruit stalks from previous years. The species has not before been observed in East Greenland, and we have only found it very scarcely on rocks with good shelter in the 3 above-named localities between 70° 50′ and 69° 25′ lat N. In West Greenland it is common north of 64° lat. N. and has besides a western extension over the

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American Archipelago; it must certainly have immigrated to the East coast by the way north of the country, as it is completely wanting in lower latitudes.

65. **Saxifraga hirculus** L.

Lge. Consp. Fl. Grl. p. 64. Hartz Fanerog. p. 233. Dusén Gefässpfl. p. 34.

Northern coast-p.: Sabine Ö, Pendulum Ö, Clavering Ö, common (all travellers)! Kap Borlase Warren (H. & K.)! Mackenzie Bugt (C. & P. Gr.)! Dronning Augusta Dal (A. G. N.)!

The species is very common in the coast regions between 75° and 73° lat. N., but else it is not known from Greenland, it flowers abundantly, the tufts are as a rule only low (about 5 ctm.) and very thick; but also higher and more lonely individuals are found in favourable localities. It is scarcely possible to insist on any limitation between the main species and Engler's var. alpina, wherefore we put down the plant under the former.

66. **Saxifraga aizoides** L.

Lge. Consp. Fl. Grl. p. 64 & 257. Hartz Fanerog. p. 333. Dusén Gefässpfl. p. 34.

Northern inlet-p.: Franz Joseph Fjord (C. & P.)! Kjerulf Fjord (D.)! Antarctic Sund (A. G. N.)! Ruth Ö (D.)! Scott Keltic Ö, Sophia Stræde (A. G. N.)! Röhs Fjord (D.)!

Scoresby Sund: Hurry Inlet (D.)! Ulveodde (H. & K.)! Röde Ö, Ispynt (H.)! Kap Seaforth (H. & K.)!

Is found in humid ground between moss in pools or in wet rocky slopes; it is not common, but is nearly always found growing socially over a greater area.

67. **Saxifraga flagellaris** Willd. var. **setigera** (Pursh) Engl.

Lge. Consp. Fl. Grl. p. 65. Hartz Fanerog. p. 333. Dusén Gefässpfl. p. 34.

Northern coast-p.: Sabine Ö, Pendulum Ö, Kap Borlase Warren (all travellers), Hold with hope (H.)! Mackenzie Bugt (Gr.)! Bontekoe Ö (D.)!

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Commonly extended in humid, clayey plains and slopes (table-land between 75° and 73° 10′ lat. N., but not observed more to the south). The individuals stand lonely, with the space of 1—2 foot between them and reach a height of 3—7 ctm., having 5—12 ctm. long off-shoots. This species appears especially in Sabine Ö in exceedingly great numbers and is a characterplant for the lower table-land where it colours large areas with its lively yellow flowers and blood-red stalks.

68. **Saxifraga aizoon** L. f. **brevifolia** Engl.

Lge. Consp. Fl. Grl. p. 65 & 257. Hartz Fanerog. p. 334.

In the interior of Scoresby Sund up to a height of 1000′ above the level of the sea. Nordvestfjord, Gaaseland, Teltplads at Röde Ö (H.)! The species was not found in any of the localities visited in 1900 and has not been observed in the southern coast region north of 67° lat N.

69. **Saxifraga oppositifolia** L.

Lge. Consp. Fl. Grl. p. 66. Hartz Fanerog. p. 334. Dusén Gefässpfl. p. 34.

Commonly extended everywhere between 77° and 67° lat. N. As well f. reptans as f. pulvinata (G. Andersen and H. Hesselman) appear and are nearly as numerous as the greater loosely tufted individuals that correspond with the main species in lower latitudes. It is found in all formations and localities, but is nowhere formation forming.

β. Nathorstii Dusén l. c.

Northern coast-p.: Mackenzie Bugt (K. A. Gr.)! Kap Franklin (K. A. Gr.)!

Northern inlet-p.: Sophia Stræde, Åkerblom Ö, Berzelius Bjerg, Ruth Ö, Dusén Fjord (A. G. N.)! Kap Seaforth (H. & K.)!

We found this remarkable form in great numbers between S. oppositifolia and S. aizoides in a low horizontal sanded flat with rather humid ground.

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Fam. 11. Crassulaceae.

70. Sedum Rhodiola D. C.

Lge. Consp. Fl. Grl. p. 66. Hartz Fanerog. p. 334. Dusén Gefässpfl. p. 38.

Northern coast-p.: Clavering Ö (C. & P. D.)!
Northern inlet-p.: Scott Keltic Ö, Röhs Fjord, Forsblad Fjord, Murrays Ö, Holloway bay (D.)! Kap Greg (H. & K.)!
Scoresby Sund: Common (H.)!
Kap Dalton-p.: Kap Dalton, Turner Sund.
Southern coast-p.: The gulf s. o. Storbræ, Skærgaards Halvöen (A.)! Nualik, Itivsalik (K.)!

Fam. 12. Plumbaginaceae.

71. Armeria vulgaris Willd. var. sibirica (Turcz) Rosenv.

Rosenvinge, Andet Tillæg til Grl. Fanerog. p. 683. Hartz Fanerog. p. 334. Dusén Gefässpfl. p. 38. Armeria sibirica Turcz. Lge. Consp. Fl. Grl. p. 70.

Northern coast-p.: Sabine Ö (all travellers)! Dronning Augusta Dal (D.)! Kap Borlase Warren (H. & K.)!
Northern inlet-p.: Forsblad Fjord (D. H. & K.)! Scott Keltic Ö (D.)! Antarctic Havn, Mackenzie Bugt (K. A. Gr.)! Moskusoxefjord (Gr.)!
Scoresby Sund: Hurry Inlet (D. H. & K.)! Liverpool Kyst, Fame Öer (H. & K.)! Kap Stewart (Ryder)!

Appears in sandy stretches near the beach, but is in Ryders Dal also found far up in the country growing luxuriantly in small downs and stony plains.

Fam. 13. Lentibulariaceae.

72. Pinguicula vulgaris L.

Hartz Fanerog. p. 384.

Only found in Scoresby Sund in Röde Ö by Hartz in pools, at brooks among moss. On the coast more to the south it is not found before 66° 20′ lat. N.

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Fam. 14. Scrophulariaceae.

73. Veronica alpina L.

Lge. Consp. Fl. Grl. p. 73. Hartz Fanerog. p. 335.

Northern inlet-p.: Fleming Inlet (H. & K.)! 71° 40'.
Scoresby Sund: Jameson Land, Gaaseland, Danmarks Ö (H.)! Hurry Inlet in the cleft (H. & K.)!
Kap Dalton-p.: Turner Sund, Kap Dalton (H. & K.)!
Southern coast-p.: Skærgaards Halvöen (A.)! Kap Warming (K.)!

Rare, in herby slopes in well sheltered places where the snow-cover is high in winter, and where there is during the summer an even luxuriant humidity.

74. Veronica saxatilis L.

Hartz Fanerog. p. 335.

Scoresby Sund: Gaaseland. In herby slopes. Snow-covered in winter (H.)!
Kap Dalton-p.: Turner Sund. In herby slopes (H. & K.)!
Southern coast-p.: Kap Warming (K.)!

In particularly well sheltered luxuriant, humid, herby slopes with high snow-cover in winter. Very rare. Most northern finding place 70° 15' lat. N.

75. Pedicularis lapponica L.

Hartz Fanerog. p. 335. Dusén Gefässpfl. p. 39.

Northern inlet-p.: Kjerulf Fjord, Röhs Fjord (D.)! Forsblad Fjord (A. G. N. H. & K.)!
Scoresby Sund: Common.
Kap Dalton-p.: Kap Dalton.

The species has not been found south of 69° 25' lat. N. and not north of 73° 10' lat. N., while it has been observed on the west coast between 78° and 60°. This difference of extension is certainly not due to the less extensive examination, for in this case it must certainly appear in the relatively well examined district of Angmagsalik south of the here discussed stretch of coast, but here it is certainly wanting. It must therefore be supposed that the

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species has immigrated via America (Labrador) and has not yet been able to spread over the whole of the east coast to which it has certainly reached by the way north of Greenland.

76. **Pedicularis flammea** L.

Hartz Fanerog. p. 335. Dusén Gefässpfl. p. 39.

Northern coast-p.: Sabine Ö (H. & K.)! Dronning Augusta Dal, Kap Borlase Warren (D.)!

Northern inlet-p.: Ruth Ö (A. G. N.)! Scott Keltic Ö (D.)! Sophia Stræde (A. G. N.)! Forsblad Fjord (D.)! Canning Land (H. & K.)!

Scoresby Sund: Kap Stewart (D.)! Hurry Inlet (D.)! Jameson Land, Vardeklöft, Liverpool Kyst (H. & K.)! Common West of Danmarks Ö (H.)!

Kap Dalton-p.: Kap Dalton, Turner Sund (H. & K.)!

The species has not been found on the coast between 69° 25′ and 66° 20′ lat. N., and it prefers the interior of the country.

77. **Pedicularis hirsuta** L.

Lge. Consp. Fl. Grl. p. 76. Hartz Fanerog. p. 335. Dusén Gefässpfl. p. 39.

Commonly extended over the whole of the examined coast and observed by all travellers in numerous localities.

78. **Euphrasia latifolia** Pursh.

Dusén Gefässpfl. p. 40. Euphrasia officinalis L. Lge. Consp. p. 79 & 264. Hartz Fanerog. p. 335. Buchenau & Focke. Zweite deutsche Nordp.

Rather rare, found as far as 74° lat. N.

Northern inlet-p.: Jackson Ö (C. & P.)! Franz Joseph Fjord, Kjerulf Fjord (D.)! Forsblad Fjord (A. G. N.)! Fleming Inlet (H. & K.)!

Scoresby Sund: Hurry Inlet (D. H. & K.)! In the interior of Scoresby Sund West of Danmarks Ö (H.)!

Kap Dalton-p.: Turner Sund (H. & K.)! Not observed between 69°30′ and 66° 20′ lat. N. The specimens reach in the outer coast region where the plant is very rare only a height of 1—4 ctm.

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in the flowering season (July), while they in the heads of the inlets are 8—15 ctm. high. In the interior it sets fruit in abundance.

79. **Bartschia alpina** L.

Lge. Consp. Fl. Grl. p. 78.

Southern coast-p.: Skærgaards Halvøen (A.)! Kap Warming, Itivsalik, Ikerasarmiut, Vahls Fjord (K.)!

The species was previously not found north of Angmagsalik (by Berlin); the present most northern point, 68°8′, a particularly favourable habitat with manured ground and herby slope is yet considerably more to the south than its northern limit on the west coast. It is very rare north of 66°20′ and only 10 ctm. high, but yet it sets flower everywhere and as far as can be judged from the collected material also fruit. It shuns here the coast, and all finding places are well sheltered, exposed to the south and have the character of herby slopes, while the species more to the south prefers heath.

Fam. 15. Polemoniaceae.

80. **Polemonium humile** Willd.

Lge. Consp. p. 80. Buchenau & Focke l. c. Hartz Fanerog. p. 335. Dusén Gefässpfl. p. 40.

Northern coast-p.: Not rare between 75° and 74° lat. N. in tableland; Sabine Ö (all travellers)! Lille Pendulum Ö (C. & P. D.)! Clavering Ö (C. & P. D.)! Dronning Augusta Dal (D.)! Kap Borlase Warren (D. H. & K.)!

The species grows socially and forms a 10—20 ctm. high cover over spots of an extension of 1—2 □ M. on clayey, sandy ground, especially where the rock comes rather near the surface.

Fam. 16. Gentianaceae.

81. **Gentiana tenella** Rottb.

Lge. Consp. p. 265. Dusén Gefässpfl. p. 41.

Very rare on grassy slopes between 74°30′ and 70°30′.

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87. **Cassiope hypnoides** (L.) Don.

Lge. Consp. p. 87 & 267. Hartz Fanerog. p. 336. Dusén Gefässpfl. p. 42.

Scoresby Sund: Jameson Land, Danmarks Ö, Gaaseland (H.)! Nordostbugt (H. & K.)! Hurry Inlet (D.)! Vardeklöft (H. & K.)! Liverpool Kyst (H. & K.)!
Kap Dalton-p.: Turner Sund, Kap Dalton.
Southern coast-p.: Storbræ, Kap Vedel, N.-Aputitek (A.)! Itivsalik, Kap G. Holm (K.)!

In humid places in heath and herby slopes where there is a large and long lasting snow-cover.

88. **Loiseleuria procumbens** (L.) Desv.

Lge. Consp. Fl. Groenl. p. 88.

Southern coast-p.: Nualik, Kap Warming, Itivsalik, Lilleö, Vahls Fjord.

In table-land and heath rather rare and of scarce importance to the character of the vegetation. The north limit 67° 16′ is far more southern than on the west coast about 75°, and this is certainly not due to the less extensive examination, but possibly to a later immigration. Climatic causes have scarcely set bounds to it.

89. **Rhododendron lapponicum** L.

Lge. Consp. Fl. Grl. p. 88 & 267. Hartz Fanerog. p. 337. Dusén Gefässpfl. p. 42.

Northern coast-p.: Kuhn Ö (C. & P.)! Clavering Ö (D.)! Kap Borlase Warren (A. G. N.)!
Northern inlet-p.: Franz Joseph Fjord (C. & P.)! Ruth Ö, Sofia Sund (A. G. N.)! Scott Keltic Ö, Röhs Fjord (D.)! Forsblad Fjord (A. G. N. H. & K.)! Antarctic Havn (A. G. N.)!
Scoresby Sund: Hurry Inlet (D. H. & K.)! Common in the interior of Scoresby Sund (H.)!
Kap Dalton-p.: Turner Sund, Henry Ö (H. & K.)!

The species shuns the outer coast and is not common in the interior; it bears only a slight part in the heath, appears only singly,

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but is yet easily recognizable on account of its short, thick, bloodless branches. In the southern coast part between 69°30′ and 66°20′ it has not been observed; probably because convenient localities — evenly sloping, humid heath — are wanting.

Fam. 20. Vaccíniaceae.

90. Vaccinium uliginosum L.

Lge. Consp. Fl. Grœnl. p. 90. Hartz Fanerog. p. 337. Dusén Gefässpfl. p. 43.

β. pubescens (Horn.) Lge.

Scoresby Sund: Common (H.)!

Kap Dalton-p.: Turner Sund, Kap Dalton (H. & K.)! Not observed between 69°25′ and 66°20′ lat. N.

γ. microphyllum (Lge.).

Common over the whole of the examined coast, collected by all travellers in heath and table-land.

Certainly no reason to separate with Lange l. c. this form as a sub-species, numerous forms of transition being found and both forms of leaves appearing even in the same individual in proportion as the branches are exposed to the wind or sheltered.

Fam. 21. Campanulaceae.

91. Campanula uniflora L.

Lge. Consp. Fl. Grœnl. p. 92. Hartz Fanerog. p. 337. Dusén Gefässpfl. p. 43.

Northern coast-p.: Rather common, noted by all travellers.

Northern inlet-p.: Mackenzie Bugt (K. A. Gr.)! Scott Keltic Ö, Robertson Ö, Röhs Fjord (D.)!

Scoresby Sund: Rather common (H.)! Hurry Inlet, common (H. & K.)!

Kap Dalton-p.: Turner Sund, Kap Dalton (H. & K.)!

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92. **Campanula rotundifolia** L.

Lge. Consp. Fl. Grœnl. p. 93. Hartz Fanerog. p. 338. Dusén Gefässpfl. p. 44.

β arctica Lge. f. *uniflora* (Lge.).

Northern coast-p.: Clavering Ö (D.)!

Northern inlet-p.: Franz Joseph Fjord (C. & P.)! Kjerulf Fjord, Moskusoxefjord (K. A. Gr.)! Scott Keltic Ö (A. G. N.)! Forsblad Fjord (D. H. & K.)! Kap Brown, Fleming Inlet, Kap Seaforth, Pingels Dal (H. & K.)!

Scoresby Sund: Common.

Kap Dalton-p.: Common.

Southern coast-p.: Kap Warming, Itivsalik, Vahls Fjord (K.)!

γ. stricta Schum.

Common in Danmarks Ö in cracks in the rocks up to 40 ctm. high (H.)!

The species grows as far north as 74° 10′ lat. N., but is not common in the coast region, it is on the other hand frequent in the interior of the country in table-land and herby slopes especially under vertical rocky walls.

Fam. 22. Compositae.

93. **Taraxacum phymatocarpum** J. Vahl.

Lge. Consp. Fl. Grœnl. p. 94. Dusén Gefässpfl. p. 44. Taraxac. phymat. f. albift. Kjellm. Hartz Fanerog. p. 338.

Northern coast-p.: Sabine Ö (all travellers)! Lille Pendulum Ö (A. G. N.)! Clavering Ö (D.)! Hold with hope (H. D.)!

Northern inlet-p.: Mackenzie Bugt (K. A. Gr.)! Ruth Ö, Scott Keltic Ö (A. G. N.)! Kap Seaforth (H. & K.)!

Scoresby Sund: Hurry Inlet (D. H. & K.)! Kap Stewart, Jameson Land, Danmarks Ö, Gaaseland (H. H. & K.)!

Forms with yellow and white (red) flowers are nearly equally common and do not seem to be distinctly separated. The species has not been observed south of Kap Stewart. 70° 25′ n. lat.

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94. **Taraxacum croceum** Dahlst.

Dusén Gefässpfl. p. 46. Taraxacum officinale Web. Lge. Consp. Fl. Grœnl. p. 94 & 270. Hartz Fanerog. p. 338.

Commonly extended between 72° and 67° 20′ lat. N., we have not observed it in our most northern places, Sabine Ö etc., wherefore also we suppose as already shown by Hartz l. c. that Sabine's Leontodan palustre floribus luteis must be classed within the preceding species.

95. **Hieracium alpinum** L.

Lge. Consp. Fl. Grœnl. p. 95. Hartz Fanerog. p. 338.

Scoresby Sund: Hurry Inlet, Jameson Land (H. & K.)! Danmarks Ö, Gaaseland, Mudderbugt (H.)!
Kap Dalton-p.: Turner Sund (H. & K.)!
Southern coast-p.: Skærgaards Halvöen (A.)! Kap Warming, Itivsalik, Vahls Fjord (K.)!

96. **Antennaria alpina** Gärtn.

Lge. Consp. Fl. Grœnl. p. 100. Hartz Fanerog. p. 339. Dusén Gefässpfl. p. 46.

Northern inlet-p.: Fleming Inlet (H. & K.)!
Scoresby Sund: Common.
Kap Dalton-p.: Turner Sund, Kap Dalton (H. & K.)!
Southern coast-p.: The bay south of Storbræ, Skærgaards Halvöen (A.)! Nualik, Kap Warming, Itivsalik, Kap G. Holm, Vahls Fjord (K.)!

β. glabrata J. Vahl.

Northern inlet-p.: Fleming Inlet (H. & K.)!
Scoresby Sund: Hurry Inlet (H. & K.)! Danmarks Ö, Gaaseland (H.)!
Kap Dalton-p.: Turner Sund, Kap Dalton (H. & K.)!
Southern coast-p.: Kap Warming (K.)!

97. **Erigeron compositus** Pursh.

Lge. Consp. Fl. Grœnl. p. 101. Hartz Fanerog. p. 339. Dusén Gefässpfl. p. 47.

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Northern coast-p.: Sabine Ö (all travellers)! Lille Pendulum Ö, Dronning Augusta Dal, Clavering Ö (A. G. N.)!
Scoresby Sund: Hurry Inlet (D.)! Liverpool Kyst (H. & K.)! Jameson Land, Gaaseland (H.)!

In table-land in dry, sandy places as well near the sea as in greater height, rather rare except in the highest North, not observed south of 70° lat. N.

98. **Erigeron uniflorus** L. *β.* **pulchellus** Fr.

Lge. Consp. Fl. Grœnl. p. 102. Hartz Fanerog. p. 339. Dusén Gefässpfl. p. 47.

Northern coast-p.: Sabine Ö (Sabine, D, H. & K.)! Kap Borlase Warren (H. & K.)! Clavering Ö (D.)! Mackenzie Bugt (K. A. Gr.)!
Northern inlet-p.: Moskusoxefjord (K. A. Gr.)! Scott Keltic Ö (D.)! Fleming Inlet, Kap Seaforth (H. & K.)!
Scoresby Sund: Hurry Inlet (D. H. & K.)! Scsbsd. (H.)!
Kap Dalton-p.: Kap Dalton (H. & K.)! Turner Sund (H. & K.)!
Southern coast-p.: Skærgaards Halvöen (A.)! Kap Warming, Itivsalik, Vahls Fjord (K.)!

I am not able to distinguish E. eriocephalus Vahl from E. uniflorus L., and these species are therefore stated together. Vide Berlin l. c. and Rosenvinge, Andet Tillæg til Grönlands Fanerog. og Karkryptogamer p. 700.

99. **Arnica alpina** (L.) Mur.

Lge. Consp. Fl. Grœnl. p. 103. Hartz Fanerog. p. 339. Dusén Gefässpfl. p. 48.

Common in North East Greenland between 74° 30′ and 69° 25 lat. N.

100. **Matricaria inodora** L. v. **phaeocephala** Rupr.

Dusén Gefässpfl. p. 46.

Northern inlet-p-: Kjerulf Fjord (A. G. N.)!

In Eskimo ruins. The species has only been observed in this single place 73° 10′ lat. N. and only in slight numbers. The indi-

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viduals are very vigorous and it is but little probable that this conspicuous plant might have avoided our attention in the numerous ruins we have visited; it is therefore not likely that it appears within the district visited by us, and its appearance in the above-named place is very difficult to explain, the more so, because it is only found in few places in West Greenland between 60° 15′ and 60° 55′ lat. N.

Fam. 28. Polygonaceae.

101. **Koenigia islandica** L.

Lge. Consp. Fl. Grœnl. p. 104 & 277. Hartz Fanerog. p. 339. Dusén Gefässpfl. p. 48.

Northern coast-p.: Sabine Ö (all travellers)! Kap Borlase Warren (H. & K.)! Mackenzie Bugt (K. A. Gr.)!
Northern inlet-p.: Antarctic Havn (A. G. N.)!
Scoresby Sund: Hurry Inlet (H. & K.)! Jameson Land (H. & K.)! Danmarks Ö, Gaaseland (H.)!
Kap Dalton-p.: Turner Sund, Kap Dalton (H. & K.)!
Southern coast-p.: Nualik (K.)!

102. **Polygonum viviparum** L.

Lge. Consp. Fl. Grœnl. p. 105. Hartz Fanerog. p. 339. Dusén Gefässpfl. p. 48.

Common everywhere in East Greenland between 74° 30′ and 66° 20′ lat. N.

103. **Oxyria digyna** (L.) Campd.

Lge. Consp. Fl. Grœnl. p. 105. Hartz Fanerog. p. 340. Dusén Gefässpfl. p. 49.

Common everywhere in East Greenland.

104. **Rumex acetocella** L.

Lge. Consp. Fl. Grœnl. p. 106. Hartz Fanerog. p. 340. Dusén Gefässpfl. p. 49.

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Northern inlet-p.: Kjerulf Fjord (D.)! Röhs Fjord (D.)! Forsblad Fjord (D. H. & K.)!
Scoresby Sund: Hurry Inlet, Kap Greg (H. & K.)! In the heads of the inlets up to 27 ctm. high (H.)!

Fam. 24. Salicaceae.

105. **Salix herbacea** L.

Lge. Consp. Fl. Grœnl. p. 106. Hartz Fanerog. p. 340. Dusén Gefässpfl. p. 49.

Northern coast-p.: Sabine Ö ♂ Fl. July (H. & K.)!
Northern inlet-p.: Forsblad Fjord (D.)! Antarctic Havn (A. G. N.)! Fleming Inlet, Kap Seaforth (H. & K.)!
Scoresby Sund: Common.
Kap Dalton-p. and southern coast-p.: Common.

106. **Salix arctica** Pall.

Lge. Consp. Fl. Grœnl. p. 108. Hartz Fanerog. p. 340. Dusén Gefässpfl. p. 50. Salix glauca Dusén l. c.

Commonly extended over the whole of N. E. Greenland and E. Greenland.

β. grœnlandica Lundstr.

Northern coast-p.: Sabine Ö, Kap Borlase Warren (H. & K.)! Mackenzie Bugt (K. A. Gr.)!
Scoresby Sund: Hurry Inlet (H. & K.)! Common in the interior.
Kap Dalton-p.: Kap Dalton (H. & K.)!

107. **Salix glauca** L.

Lge. Consp. Fl. Grœnl. p. 110. Hartz Fanerog. p. 341.

Scoresby Sund: Common in the interior (H.)!
Kap Dalton-p.: Kap Dalton (H. & K.)!
Southern coast-p.: Common.

f. *subarctica* (And.) Lundstr.

Scoresby Sund: Hurry Inlet (H. & K.)!

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Fam. 25. Betulaceae.

108. **Betula nana** L.

Lge. Consp. Fl. Grœnl. p. 112 & 280. Hartz Fanerog. p. 341. Dusén Gefässpfl. p. 50.

Northern inlet-p.: Common, observed by all travellers. Most northern finding-place 73° 40′, Moskusoxefjord (K. A G.)!
Scoresby Sund: Common.
Kap Dalton-p.: Common.
Southern coast-p.: Not observed between 69° 25′ and 66° 20′ lat. N.

The species likes heath and table-land in the interior of the country.

Fam. 26. Liliaceae.

109. **Tofieldia palustris** Huds.

F. borealis Wbg. Lge. Consp. Fl. Grœnl. p. 122. Hartz Fanerog. p. 342. Dusén Gefässpfl. p. 51.

Northern inlet-p.: Moskusoxefjord, Scott Keltic Ö (K. A. Gr.)! Röhs Fjord (D.)! Antarctic Havn (A. G. N.)! Forsblad Fjord (H. & K.)!
Scoresby Sund: Hurry Inlet.
Kap Dalton-p.: Not observed.
Southern coast-p.: Itivsalik (K.)!

110. **Tofieldia coccinea** Richards.

Rosenvinge, 2. Tillæg til Consp. Fl. Grœnl. p. 712. Hartz Fanerog. p. 342. Dusén Gefässpfl. p. 51.

Northern inlet-p.: Forsblad Fjord (A. G. N. H. & K)! Rhedin Fjord (A. G. N)!
Scoresby Sund: Hurry Inlet (H. & K.)!

Fam. 27. Juncaceae.

111. **Juncus biglumis** L.

Lge. Consp. Fl. Grœnl. p. 122 & 284. Hartz Fanerog. p. 342. Dusén Gefässpfl. p. 52. Ostenf. Fl. arct. p. 25.

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Pools and humid herby slopes; not common north of Scoresby Sund.

Northern coast-p.: Sabine Ö, common, Kap Borlase Warren (K.)! Hold with hope (H.)! Kap Bror Ruys (C. & P.)!

Northern inlet-p.: Franz Joseph Fjord (C. & P.)! Ruth Ö, Bontekoe Ö. Scott Keltic Ö (A. G. N. D.)! Forsblad Fjord (N. K.)! Ørsteds Dal (H. & K.)! Fleming Inlet, 17 ctm. high (K.)!

Scoresby Sund: Common (H.)! Hurry Inlet (D.)! Liverpool Kyst, Jameson Land (20 ctm. high) and the cleft in Hurry Inlet (K.)! Nordostbugt (H.)!

Kap Dalton-p.: Turner Sund (K.)!

Southern coast-p.: Not observed between 69° 30′ and 66° 20′.

112. **Juncus triglumis** L.

Lge. Consp. Fl. Grœnl. p. 123 & 284. Hartz Fanerog. p. 342. Dusén Gefässpfl. p. 52. Ostenf. Fl. arct. p. 25.

In pools; very rare.

Northern coast-p.: Kap Borlase Warren (in a rill, 5 ctm. high (K.)!

Northern inlet-p.: Ruth Ö, Forsblad Fjord (D.)!

Scoresby Sund: Not common in the interior, Röde Ö, Renodde, Ispynt, Hurry Inlet (D.)!

Var. **Copelandi** Buch.

Zweite Deutsche Nordpolsf. p. 51.

Franz Joseph Fjord (C. & P)! Turner Ö (K.)! 900 m. s. m.

113. **Juncus castaneus** Sm.

Lge. Consp. Fl. Grœnl. p. 123 & 284. Hartz Fanerog. p. 343. Dusén Gefässpfl. p. 52. Ostenf. Fl. arct. p. 24.

Northern coast-p.: Clavering Ö (N.)!

Northern inlet-p.: Franz Joseph Fjord (C. & P.)! Röhs Fjord, Forsblad Fjord (D.)!

Scoresby Sund: In pools, Jameson Land, Danmarks Ö, Ispynt (H.)! Hurry Inlet (D.)! Liverpool Kyst and Ryders Dal (K.)!

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114. **Juncus trifidus** L.

Lge. Consp. Fl. Grœnl. p. 123 & 284. Hartz Fanerog. p. 343. Ostenf. Fl. arct. p. 26.

Scoresby Sund: In dry slopes, thickets and table-land; more rare in heath. In the interior, Danmarks Ö, Gaaseland, Röde Ö, up to 20 ctm. high (H.)!

Southern coast-p.: Turner Sund in table-land (K.)! Not observed between 69° 30′ and 67° 16′. Commonly extended south of 67° 16′ in table-land and heath.

115. **Juncus arcticus** Willd.

Lge. Consp. Fl. Grœnl. p. 124 & 284. Hartz Fanerog. p. 343. Dusén Gefässpfl. p. 52. Ostenf. Fl. arct. p. 24.

Northern inlet-p.: Röhs Fjord, Forsblad Fjord (D.)! Örsteds Dal 25 ctm. (K.)!

Scoresby Sund: Common in the interior (H.)! Jameson Land (H.)! Ryders Dal, downs at Bielven 40 ctm. high (H.)! Liverpool Kyst (K.)!

116. **Luzula multiflora** (Ehrh.) Lge.

Lge. Consp. Fl. Grœnl. p. 125 & 285. Hartz Fanerog. p. 343. Ostenf. Fl. arct. p. 31. L. campestris D. E. * frigida Buchen. Dusén Gefässpfl. p. 53.

In thickets up to 45 ctm. high.

Scoresby Sund: Röde Ö (H.)! Hurry Inlet (D.)!

117. **Luzula arcuata** (Wbg.) Sw. *β.* **confusa** Lindeb.

Lge. Consp. Fl. Grœnl. p. 127 & 285. L. confusa Lindeb. Hartz Fanerog. p. 343. Dusén Gefässpfl. p. 53.

In table-land and heath, often snow-less in winter. Common everywhere in North East Greenland, observed by all travellers.

f. *subspicata* Lge.

Northern coast-p.: Sabine Ö (K.)! Kap Borlase Warren (K.)!

Northern inlet-p.: Forsblad Fjord, Kap Brown, Kap Greg.

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118. **Luzula nivalis** (Læst.) Beurl.

Gelert: Ostenf. Fl. arct. p. 30. L. arctica Blytt. Lge. Consp. Fl. Grœnl. p. 127. Hartz Fanerog. p. 343. Dusén Gefässpfl. p. 54.

Northern coast-p.: Lille Pendulum Ö (A. G. N.)! Sabine Ö, Kap Borlase Warren (H. & K.)! Hold with hope in dry clay-field (H.)!

Scoresby Sund: Hurry Inlet (H. & K.)! Liverpool Kyst (H. & K.)!

f *pygmaea* Hartz.

Scoresby Sund: Jameson Land (H.)!

119. **Luzula spicata** (L.) D. C.

Lge. Consp. Fl. Grœnl. p. 128 & 286. Hartz Fanerog. p. 344. Dusén Gefässpfl. p. 53.

In herby slopes and copses of willows, snow covered in winter.

Scoresby Sund: Danmarks Ö (up to 25 ctm.), Gaaseland, Röde Ö, Kobberpynt and several places, especially in the inner inlets (H.)! Hurry Inlet (D.)! The cleft in Hurry inlet (K.)!

Kap Dalton-p.: Kap Dalton (H. & K.)! Turner Sund (K.)!

Southern coast-p.: Kap Irminger (A.)! Nualik (K.)! Kap Warming (K.)! Itivsalik (K.)! Vahls Fjord (K.)!

Fam. 28. Cyperaceae.

120. **Scirpus caespitosus** L. f. **austriaca** Pall.

Sc. caespitos. Lge. Consp. Fl. Grœnl. p. 129 & 286. Rosenv. Till. p. 716. Ostenf. Fl. arct. p. 43.

Southern coast-p.: Itivsalik (K.)!

121. **Eriophorum Scheuchzeri** Hoppe.

Lge. Consp. Fl. Grœnl. p. 129. Hartz Fanerog. p. 344. Dusén Gefässpfl. p. 54.

Common everywhere in East Greenland.

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122. **Eriophorum polystachium** L.

Buchenau & Focke Zweite deutsche Nordpolsfarth p. 53. Ostenf. Fl. arct. p. 53. E. angustifolium Roth. Lge. Consp. Fl. Grœnl. p. 130 & 287. Hartz Fanerog. p. 344. Dusén Gefässpfl. p. 54.

Common everywhere in East Greenland.

123. **Elyna Bellardi** (All.).

Lge. Consp. Fl. Grœnl. p. 130 & 287. Hartz Fanerog. p. 344. Ostenf. Fl. arctica. p. 44. Carex parallela Dusén p. 54.

Northern coast-p.: Sabine Ö and Kap Borlase Warren (K.)! Kap Bror Ruys (C. & P.)!
Northern inlet-p.: Franz Joseph Fjord and Röhs Fjord (D.)! Kong Oscar Fjord (H.)! Forsblad Fjord (D., K.)!
Scoresby Sund: Common (H.)! Hurry Inlet (D. H. & K.)!

124. **Kobresia bipartita** (All.) Britton.

Ostenf. Fl. arct. p. 44. K. caricina. Lge. Consp. Fl. Grœnl. p. 130 & 287. Hartz Fanerog. p. 344.

Rare, up to 20 ctm. high (H.)!

Northern inlet-p.: Franz Joseph Fjord (C. & P.)!
Scoresby Sund: Ispynt in Vestfjord (H.)!

125. **Carex nardina** Fr.

Lge. Consp. Fl. Grœnl. p. 131 & 287. Hartz Fanerog. p. 345. Dusén Gefässpfl. p. 55. Ostenf. Fl. arct. p. 48.

Common everywhere in table-land and in other dry places.

126. **Carex dioica** L. v. **parallela** Læstad.

Ostenf. Fl. arct. p. 60. C. parallela, Hartz Fanerog. p. 344 (non Dusén). C. gynocrates Wormsky, Rosenv. Till. p. 717.

In humid pools.

In the innermost of Scoresby Sund: Ispynt in Vestfjord, Röde Ö, tentplace at Röde Ö. rare (H.)!

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127. **Carex capitata** Soland.

Lge. Consp. Fl. Grœnl. p. 132 & 287. Rosenv. Till. p. 718. Ostenf. Fl. arct. p. 49.

Southern coast-p.: Lilleö 66° 58′ n. Br. (K.)!

128. **Carex ursina** Dew.

Lge. Consp. Fl. grœnl. p. 132 & 267. Dusén Gefässpfl. p. 55. Ostenf. Fl. arct. p. 59.

Northern coast-p.: Kap Borlase Warren (H. & K.)!
Northern inlet-p.: Röhs Fjord (D.)!
Scoresby Sund: Hurry Inlet (D. H. & K.)!
Kap Dalton-p.: Dunholm (H. & K.)!

129. **Carex scirpoidea** Michx.

Lge. Consp. Fl. Grœnl. p. 132 & 287. Hartz Fanerog. p. 345. Dusén Gefässpfl. p. 55. Ostenf. Fl. arct. p. 82.

Northern inlet-p.: Fleming Inlet (H. & K.)!
Scoresby Sund: Hurry Inlet (D. H. & K.)! Liverpool Kyst (H. & K.)!
Kap Dalton-p.: Turner Sund, Kap Dalton (H. & K.)!
Southern coast-p.: Lilleö, Jagos Fjord (K.)!

130. **Carex microglochin** Wbg.

Lge. Consp. Fl. Grœnl. p. 133 & 288. Hartz Fanerog. p. 345. Ostenf. Fl. arct. p. 92.

Scoresby Sund: In humid pools among sphagna, not common, in the inner part of Scoresby Sund, in Danmarks Ö, Röde Ö, Vestfjord (H.)!

131. **Carex rupestris** All.

Lge. Consp. Fl. Grœnl. p. 133 & 288. Hartz Fanerog. p. 345. Dusén Gefässpfl. p. 55. Ostenf. Fl. arct. p. 86.

Northern coast-p.: Sabine Ö, Kap Borlase Warren (H. & K.)! Clavering Ö (A. G. N.)!
Northern inlet-p.: Forsblad Fjord (A. G. N.)!

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Scoresby Sund: Common.
Kap Dalton-p.: Turner Sund, Kap Dalton (H. & K.)!

132. **Carex incurva** Lightf.

Lge. Consp. Fl. Grœnl. p. 133 & 288. Hartz Fanerog. p. 345. Ostenf. Fl. arct. p. 49.

In sand in humid places, banks of rivers, pools and the like, rather rare.

Northern coast-p.: Kap Borlase Warren (H. & K.)! Clavering Ö, Bontekoe Ö (D.)!
Northern inlet-p.: Kap Seaforth in Örsteds Dal, Scott Keltic Ö (D.)!
Scoresby Sund: Jameson Land and Gaasefjord (Hartz l. c.), Ryders Dal on Bielven; in a stony plain; in a humid little down Fame Öer (H. & K.)!

133. **Carex Macloviana** D. Urv.

Ostenf. Fl. arct. p. 54. C. festiva Dewey. Lge. Consp. Fl. Grœnl. p. 134 & 288. Hartz Fanerog. p. 345.

Scoresby Sund: In herby slopes, copse and table-land, but only in Gaaseland (H.)!

134. **Carex lagopina** Wbg.

Lge. Consp. Fl. Grœnl. p. 135 & 288. Hartz Fanerog. p. 346. Dusén Gefässpfl. p. 56. Ostenf. Fl. arct. p. 58.

In pools, at melting snow-drifts, on the beach etc.

Northern inlet-p.: Sabine Ö, Lille Pendulum Ö (D.)!
Northern coast-p.: Kap Seaforth (H. & K.)! Fleming Inlet (K.)!
Scoresby Sund: Hurry Inlet (D.)! Klöften and Jameson Land (K.)! Kap Stewart (D.)!
Common in Scoresby Sund (H.)!
Southern coast-p.: Kap Irminger, Skærgaards Halvöen (A.)!

135. **Carex alpina** Sw.

Lge. Consp. Fl. Grœnl. p. 138 & 289. Hartz Fanerog. p. 346.

Scoresby Sund: Danmarks Ö, rare (H.)!

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136. **Carex misandra** R. Br.

Lge. Consp. Fl. Grœnl. p. 139 & 289. Hartz Fanerog. p. 346. Dusén Gefässpfl. p. 57. Ostenf. Fl arct. p. 88.

Common between 75° and 79°30′. In heath and table-land, always snow-covered in winter (H.)!

137. **Carex glareosa** Wbg.

Lge. Consp. Fl. Grœnl. p. 137 & 289. Rosenv. Till. p. 720. Ostenf. Fl. arct. p. 58. C. ursina Hartz Fanerog. p. 345.

On clayey and sandy flats near the high-water mark.

Northern coast p.: Sabine Ö (H. & K.)!
Kap Dalton-p.: Kap Dalton, Dunholm (H. & K.)!
Southern coast-p.: Kap Irminger (A.)! Itivsalik (K.)!

138. **Carex bicolor** All.

Lge. Consp. Fl. Grœnl. p. 138. Ostenf. Fl. arct. p. 79.

Southern coast-p.: Only found in N.-Aputitek 67°48′ (A)!

f. *rostrata* Ostenf.

Perigynium plano-convex., rostro brevi integro.

Scoresby Sund: In a pool in Jameson Land at the Nordostbugt (H. & K.)!

139. **Carex salina** Wbg. f. **subspathacea** (Wormsky).

Ostenf. Fl. arct. p. 73. C. subspathacea Dry. Lge. Consp. Fl. Grœnl. p. 140 & 288. Hartz Fanerog. p. 346. Dusén Gefässpfl. p. 56.

In clay and sand on the beach.

Northern coast-p.: Sabine Ö (D. H. & K.)!
Northern inlet-p.: Franz Joseph Fjord (C. & P.)! Scott Keltic Ö (A. G. N.)! Kap Seaforth (H. & K.)!
Scoresby Sund: Jameson Land and Danmarks Ö (1—5 ctm. high) (H.)! Kap Stewart and Hurry Inlet (D.)!
Kap Dalton-p.: Dunholm (H. & K.)!

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140. **Carex rigida** (Good.)

Ostenf. Fl. arct. p. 77. Lge. Consp. Fl. Grœnl. p. 145 & 291. Rosenv. Till. p. 723. Hartz Fanerog. p. 392. C. hyperborea Drej. Lge. l. c. p. 160 & 290. Hartz l. c. p. C. Bigelowii. C. saxatilis. C. Fyllæ Holm. C. Warmingii Holm. C. vulgaris Fr. C. stans. Dry. C. limula Fr. C. grœnlandica Lge. C. Drejeriana. Lge l. c.

Northern inlet-p.: Fleming Inlet (H. & K.)!
Scoresby Sund: Common.

f. *Bigelowii* Tuch.

C. hyperborea Drejer. Hartz l. c.

Northern inlet-p.: Forsblad Fjord (H. & K.)!
Southern coast-p.: Kap Vedel, Skærgaards Halvöen (A.)!

141. **Carex capillaris** L.

Lge. Consp. Fl. Grœnl. p. 148 & 292. Hartz Fanerog. p. 346. Dusén Gefässpfl. p. 57. Ostenf. Fl. arct. p. 90.

In heath and table-land, especially in clefts, snow-covered in winter (Hartz)!

Northern inlet-p.: Franz Joseph Fjord (D.)! Kjerulf Fjord (D.)!
Scoresby Sund: Several places (H.)! Hurry Inlet (D. H. & K.)! Liverpool Kyst (K.)! Jameson Land at Nordostbugt (H.)!
Kap Dalton-p.: Turner Sund (K.)! Henry Ö, 850 M. above the sea (Koch)!
Southern coast-p.: Kap Jörgensen (Itivsalik) (K.)!

142. **Carex rariflora** (Wbg.) Sm.

Lge. Consp. Fl. Grœnl. p. 150 & 292. Hartz Fanerog. p. 347. Dusén Gefässpfl. p. 57. Ostenf. Fl. arct. p. 67.

In pools, on banks of rivers and lakes, up to 15 ctm. high (Hartz)!
Scoresby Sund: Danmarks Ö and Röde Ö (H.)! Hurry Inlet (D.)! Jameson Land at the Nordvestbugt (H.)! Rare.

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143. **Carex pedata** Wbg.

Lge. Consp. Fl. Grœnl. p. 151 & 293. Hartz Fanerog. p. 347. Ostenf. Fl. arct. p. 87.

In table-land, especially in cracks in the rocks.

Scoresby Sund: Not rare. Danmarks Ö, Gaasefjord, Röde Ö.
Kap Dalton-p.: Turner Sund (K.) 69° 44′.
Southern coast-p.: Langö. 67° 5′.

144. **Carex supina** Wbg.

Lge. Consp. Fl. Grœnl. p. 151 & 293. Hartz Fanerog. p. 347. Dusén Gefässpfl. p. 57. Ostenf. Fl. arct. p. 95.

Northern inlet-p.: The inner part of Kjerulf Fjord (Dus.).
Scoresby Sund: In table-land and dry cracks, together with dry pools in the inner part (H.)!

145. **Carex rotundata** Wbg.

Lge. Consp. Fl. Grœnl. p. 152 & 293. Rosenv. Till. p. 724. Ostenf. Fl. arct. p. 94.

Scoresby Sund: Only found in a pool at the Nordostbugt (H. & K.)!

146. **Carex pulla** Good.

Lge. Consp. Fl. Grœnl. p. 153 & 293. Hartz Fanerog. p. 347. Dusén Gefässpfl. p. 57. Ostenf. Fl. arct. p. 95. C. saxatilis L.

Northern inlet-p.: Forsblad Fjord (D. H. & K.)! Kap Seaforth (Örsted Dal) (H. & K.)!
Scoresby Sund: In pools and puddles, exceedingly common (H.), several places in Hurry Inlet, in pools at the Nordostbugt (H. & K.)!

Fam. 29. Gramineae.

147. **Alopecurus alpinus** Sm.

Lge. Consp. Fl. Grœnl. p. 156. Hartz Fanerog. p. 347. Dusén Gefässpfl. p. 57. Ostenf. Fl. arct. p. 99.

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Northern coast-p: Commonly extended and observed by all travellers.

Northern inlet-p.: Scott Keltic Ö, Bontekoe Ö (D.)!

Scoresby Sund: Common in the outer parts, not observed in the inner inlets (H.)! Common in Hurry Inlet (H. & K.)!

Kap Dalton-p.: Turner Sund (H. & K.)!

The species likes sandy and clayey humid flats and manured places (old Eskimo places of residence) and is certainly commonly extended over the whole of the coast north of 69° 25′ lat. N., it is on the other hand not found in the corresponding localities of the interior. It is upon the whole not observed south of 69° 25′, nor is it certainly found, while it grows as far south as 61° 53′ in West Greenland and is not rare there north of 66° lat. N.

148. **Hierochloa alpina** (Lilljebl.) R. & S.

Lge. Consp. Fl. Grœnl. p. 157. Hartz Fanerog. p. 348. Dusén Gefässpfl. p. 58.

Northern coast-p.: Shannon Ö (C. & P.)! Sabine Ö (all travellers)! Kap Borlase Warren (H. & K.)! Hvalros Ö, Clavering Ö (D.)! Hold with hope (H.)!

Northern inlet-p.: Kjerulf Fjord, Scott Keltic Ö, Röhs Fjord, Forsblad Fjord, Kap Parry (D.)! Antarctic Havn (A. G. N.)! Kap Greg (H. & K.)!

Scoresby Sund: Very common, up to 50 ctm. high (H.)! Common in Hurry Inlet (H. & K.)!

The species has not been observed south of 70° lat. N. on the east coast except a single locality 61° 32′, Anoritak (Vahl), that must be considered in coherence with the southern west coast. It is commonly extended from 70° to the most northern visited points as in the corresponding parts of West Greenland, wherefore its appearance certainly must be considered as coherent.

149. **Agrostis borealis** Hartm.

Murb. in Bot. Not. 1898. p. 11. Ostenf. Fl. arct. p. 109. A. rubra L. Lge. Consp. Fl. Grœnl. p. 157 & 295. Hartz Fanerog. p. 348.

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Scoresby Sund: Danmark Ö, tentplace at Röde Ö, not common (H.)!

f. *mutica* Hartz l. c.

Scoresby Sund: Röde Ö (H.)!

Only found in the interior of Scoresby Sund and here not common, besides not observed on the coast north of 66°20′ lat. N.

150. **Calamagrostis arundinacea** (L.) Roth.

Ostenf. Fl. arct. p. 102. C. purpurascens R. Br. Lge. Consp. Fl. Grœnl. p. 160. Hartz Fanerog. p. 348. Dusén Gefässpfl. p. 58. C. hyperborea Dusén (non Lge.) l. c. p. 58.

Northern coast-p.: Clavering Ö (D.)!

Northern inlet-p.: Franz Joseph Fjord (C. & P.)! Kjerulf Fjord, Röhs Fjord (D.)! Forsblad Fjord (D. H. & K.)! Polhelms Dal, Kap Greg (H. & K.)!

Scoresby Sund: Common everywhere (H.)! Hurry Inlet common (H. & K.)!

Kap Dalton-p.: Turner Sund (H. & K.)! Stewart Ö (Kock)!

This considerable species forms often thick plantations on the slopes and reaches a height of 50—70 ctm. in the interior of the country; it is very rare immediately near the sea and reaches there only a height of 20—25 ctm. It has upon the whole not been found south of 69°35′ lat. N. in East Greenland.

151. **Calamagrostis neglecta** (Ehrh.) Gelert.

Ostenf. Fl. arct. p. 103. C. stricta β borealis. Lge. Consp. Fl. Grœnl. p. 161. Hartz Fanerog. p. 348. Dusén Fanerog. p. 58.

In pools, in sandy flats and on lakes.

Northern inlet-p.: Antarctic Havn (A. G. N.)! Kap Seaforth (H. & K.)!

Scoresby Sund: Hurry Inlet at Ryders Elv (H. & K.)! Nordostbugt (H. & K.)! Kingua Gaasefjord, Vestfjord (H.)!

152. **Aira cæspitosa** L. f. **alpina** (L.).

Ostenf. Fl. arct. p. 113. A. alpina. Lge. Consp. Fl. Grœnl. p. 163 & 296. A. brevifolia Buchenau & Focke l. c. p. 54. Hartz Fanerog. p. 348.

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Northern coast-p.: (Sabine!) Sabine Ö (H. & K.)! Kap Phillip Broke (C. & P.)! Hold with hope (H.)!

The collected specimen is small, c. 7 ctm. high and was found in a paved clayey flat near Germania Havn. Outside the range 73° 30′—70° 30′ lat. N. the species is found only south of 66° 20′ lat. N. and certainly it does not occur on the interjacent coast.

153. **Trisetum subspicatum** (L.) Beauv.

Lge. Consp. Fl. Grœnl. p. 164 & 297. Hartz Fan. and Karkrypt. p. 349. Dusén Gefässpfl. p. 59. Ostenf. Fl. arct. p. 110.

Commonly extended everywhere in North East Greenland and observed by all travellers in numerous localities as well near the sea as in the interior of the inlets.

154. **Pleuropogon Sabinei** R. Br.

Lge. Consp. Fl. Grœnl. p. 297. Dusén Gefässpfl. p. 59.

In shallow ponds.

Northern inlet-p.: Mackenzie Bugt 73° 50′ n. Lat. (Gredin)!
Scoresby Sund: Hurry Inlet (Arfvidson)! Pond at Ulveodde. Several ponds on the side of the Liverpool Kyst opposite Fame Öer (H. & K.)!

This remarkable species was first found by Cand. Arvidsen on the Nathorst expedition in 1899 and we found it in several places on Hurry Inlet, and at the same time it was collected far more to the north by Gredin. It is possibly more extended than stated by these few finding-places, but being little conspicuous and easily hiding itself between Carex rariflora to which it bears an outward resemblance, it is easily overlooked which may possibly explain its peculiar appearance.

155. **Dupontia Fischeri** R. Br.

Chloris Melvilliana p. 33. Gelert in Ostenf. Fl. arct. p. 114. Dupontia psilosantha Rupr. Lge. Consp. Fl. Grœnl. p. 165.

Northern coast-p.: Sabine Ö (H. & K.)!
Scoresby Sund: Hurry Inlet Klöften (H. & K.)!

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Geograf-distribution: West Greenl. 69° 20′—70° 40′ and 81° 30′ lat. N. Arct. America—Asia Spitsbergen. Frantz Joseph Land. Novaya Zemlya—NE. Amerika, N. Russia.

In grassy slopes in humid places.

156. **Phippsia algida** R. Br.

Chloris Melvilleana. Gelert in Ostenf. Fl. arct. p. 101. Catabrosa algida (Sol) Fr. Lge. Consp. Fl. Grœnl. p. 166 & 298. Hartz Fanerog. p. 349. Dusén Gefässpfl. p. 59.

Northern coast-p.: Shannon Ö (C. & P.)! Sabine Ö (H. & K.)! Hold with hope (H.)! Hvalros Ö (Gr.)!

Northern inlet-p.: Kap Bennet (D.)! Franz Joseph Fjord (C. & P.)! Fleming Inlet (H. & K.)!

Scoresby Sund: Common especially in the outer part (H.)! Hurry Inlet; common (H. & K.)!

Kap Dalton-p.: Turner Sund, Kap Dalton, Dunholm (H. & K.)!

Southern coast-p.: N.-Aputitek (Amdrup)! Nualik, Kajarsak, Kap Hildebrandt, Kap Warming (K.)!

The species is common south of Scoresby Sund attaining there especially in the manured places round house ruins and in tent-places a considerable size and luxuriance. Straws of a length of 15 ctm. are not rare and it forms a cover together with Cerastium trigynum. It appears less frequently more to the north and then in humid places and most often near the sea.

157. **Arctagrostis latifolia** (R. Br.) Griseb.

Ledebour Fl. Ross. IV. p. 434. Ostenf. Fl. arct. p. 107. Colpodium latifolium. Lge. Consp. Fl. Grœnl. p. 166. Hartz Fanerog. p. 349. Dusén Gefässpfl. p. 59.

Northern coast-p.: Sabine Ö (H. & K.)! Kap Borlase Warren (D. H. & K.)! Kap Bror Ruys (C. & P.)!

Northern inlet-p.: Moskusoxefjord (Gr.)! Franz Joseph Fjord (C. & P.)! Scott Keltic Ö, Sofia Sund (A. G. N.)!

Scoresby Sund: Common east of Danmarks Ö, but not found in the interior (H.)! Hurry Inlet common (D. H. & K.)!

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The species reaches a height of up to 50 ctm. and is only found in the outer part of the inlets, besides along the outer coast, and is rather common. It has not been observed south of 70° lat. N.

158. **Glyceria distans** (L.) Wbg.

Gelert in Ostenf. Fl. arct. p. 127. G. Borreri Lge. Consp. Fl. Grœnl. p. 167. G. arctica Lge. l. c. p. 169. G. vaginata Lge. l. c. p. 168. G. angustata Dusén Gefässpfl. p. 60.

Northern inlet-p.: Kjerulf Fjord (A. G. N., D.)!

Scoresby Sund: Hurry Inlet on Ryder Elv, Hurry Inlet the side of Jameson Land (H. & K.)!

This species was found in a few localities in Hurry Inlet, but only very scarcely in humid, clayey sandy flats, washed out by the river. It formed spread tufts with a space of several meters between them alternating with as many spread individuals of G. maritima. Farther up in the country where the ground was somewhat more dry, a thicker plantation was found mixed up with Potentilla pulchella, Taraxacum phymatocarpun, Carex ursina and Salix grœnlandica. The species has not before been stated from East Greenland, but going through the collections from the Nathorst expedition in Stockholm and Upsala I found under the indication of G. angustata specimens that undoubtedly must be reckoned within this.

159. **Glyceria maritima** (Huds.) Wbg. f. **vilfoidea** And.

Lge. Consp. Fl. Grœnl. p. 168 & 299. G. vilfoidea Lge. l. c. p. 170 & 300. Hartz Fanerog. p. 349. Dusén Gefässpfl. p. 60.

Northern coast-p.: Sabine Ö (A. G. N. H. & K.)! Kap Borlase Warren (H. & K.)! Dronning Augusta Dal (A. G. N.)!

Northern inlet-p.: Forsblad Fjord (A. G. N.)! Polhems Dal (H. & K.)! Kap Seaforth (H. & K.)!

Scoresby Sund: Jameson Land, Danmark Ö, Röde Ö, Nordvestfjord, Gaasefjord and several other places (H.)! Hurry Inlet (A. C. N.)! Fame Öer, the side of Jameson Land in Hurry Inlet, Ulveodde, Liverpool Kyst, Kap Hope, Kap Stewart, Kap Tobin, Nordostbugt (H. & K.)! Stony plain on Bielven (H. & K.)!

Kap Dalton-p.: Turner Sund, Dunholm (H. & K.)!

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160. **Glyceria angustata** (R. Br.) Fr.

Lge. Consp. Fl. Grœnl. p. 171 & 300. Hartz Fanerog. p. 349 ex parte. Dusén Gefässpfl. p. 60.

Northern inlet-p.: Vega Sund (D.)! Kjerulf Fjord (D.)!
Scoresby Sund: Jameson Land (H.)! Nordostbugt, Ryders Dal, Fame Öer (H. & K.)!

Going through the collections of the Nathorst expedition I found the above-named specimens which I class within this species. It appears in stony sand near the water. The species has not been observed between 70° and 66° lat. N.

161. **Glyceria Vahliana** (Liebm.) Th. Fr.

Lge. Consp. Fl. Grœnl. p. 171 & 300. G. angustata Hartz Fanerog. p. 349 ex parte. Ostenf. Fl. arct. p. 126.

Scoresby Sund: Kap Stewart (H. 1895), Ryders Dal, Hurry Inlet on the side of the Liverpool Kyst (H. & K.)!

Going through the previous collections I found among the glycerias collected by Hartz one that must certainly be classed within this species which was also done by the late Gelert in Fl. arct. l. c.

162. **Poa abbreviata** R. Br.

Lge. Consp. Fl. Grœnl. p. 172. Hartz Fanerog. p. 349. Dusén Gefässpfl. p. 60.

Northern coast.p.: Sabine Ö (H. & K.)! Lille Pendulum Ö, Hvalros Ö (D.)! Kap Borlase Warren (D. H. & K.)! Clavering Ö (C. & P.)!
Northern inlet-p.: Franz Joseph Fjord (C. & P.)!
Scoresby Sund: Jameson Land (H.)! Hurry Inlet (A. G. N.)!

The species is commonly extended in the northern coast part and appears else but very spread which is also consistent with its high arctic extension in other respects. It must most reasonably be looked on as a high arctic form of P. laxa the northern limit of which is also nearly identical with its southern limit and to which it bears very great resemblance.

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163. **Poa glauca** M. Vahl.

Lge. Consp. Fl. Grœnl. p. 172. Hartz Fanerog. p. 350. Dusén Gefässpfl. p. 60.

α. genuina Lge.

Commonly extended over the whole of the east coast in tableland and heath.

β. elatior Anderson.

Scoresby Sund: Commonly extended in the interior (H.)! Hurry Inlet; common, Fame Öer (H. & K.)!

γ. palida Lge.

Southern coast-p.: Kap Irminger (A.)!

δ. abroviolacea Lge.

Scoresby Sund: Kap Stewart (H.)!
Kap Dalton-p.: Turner Sund (H. & K.)!

f. *arenaria* Hartz l. c.

Scoresby Sund: Jameson Land (H.)! Ryders Dal in downs (H. & K.)!

164. **Poa nemoralis** L. v. **palida** Lge.

Lge. Consp. Fl. Grœnl. p. 175. Hartz Fanerog. p. 350.

Scoresby Sund: In a humid crack in the rock in mica-slate, in shelter, snow-covered in winter, Danmarks Ö (H.)!

165. **Poa alpina** L.

Lge. Consp. Fl. Grœnl. p. 176 & 302. Hartz Fanerog. p. 350. Dusén Gefässpfl. p. 61.

Northern coast-p.: Lille Pendulum Ö, Kap Borlase Warren (D.)! Hold with hope.
Northern inlet-p.: Kjerulf Fjord (D.)! Antarctic Havn, Scott Keltic Ö (A. G. N.)!
Scoresby Sund: Common (H.)! Hurry Inlet (H. & K.)! Kap Stewart (D.)!

f. *vivipara.*

Northern inlet-p.: Kap Seaforth (H. & K.)!

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Scoresby Sund: In the outer parts (H.)!
Kap Dalton-p.: Turner Sund, Kap Dalton (H. & K.)!
Southern coast-p.: Storbræ (Amdrup)! Kap Warming, Itivsalik (K.)!

166. **Poa pratensis** L.

Lge. Consp. Fl. Grœnl. p. 176 & 301. Hartz Fanerog. p. 350.

Northern inlet-p.: Kap Brown, Kap Greg (H. & K.)!
Scoresby Sund: Commonly extended (H.)! Hurry Inlet; common (H. & K.)!
Kap Dalton-p.: Turner Sund, Kap Dalton (H. & K.)!
Southern coast-p.: Kap Grivel (Amdrup)! Kap Warming (K.)!

The northern limit of the species is at 71° 50′ lat. N.

167. **Poa cenisia** All.

Gelert in Ostenf. Fl. arct. p. P. flexuosa Wbg. Lge. Consp. Fl. Grœnl. p. 178 & 302. Hartz Fanerog. p. 351. Dusén Gefässpfl. p. 61. P. filipes Lge. l. c. p. 175. P. laxa R. Br. and P. arctica R. Br. Buchenau & Focke.

Common everywhere in East Greenland and observed by all travellers.

168. **Festuca ovina** L.

Rosenv. Till. p. 735 & 736. Lge. Consp. Fl. Grœnl. p. 179 & 302. Hartz Fanerog. p. 351. Dusén Gefässpfl. p. 62. Buchenau & Focke. Festuca duriuscula L. Lge. l. c. p. 180. F. Richardsonii Hook Lge. l. c. 181. F. *borealis Lge. l. c. 179. F. brevifolia R. Br. Lge. l. c. 179.

Common everywhere in East Greenland and observed by all travellers. The species is very variable, but the variations pass so evenly into each other that it is very difficult to separate them when a greater material is looked at; I therefore put down only the main species and do not state localities for any one of the forms. It is besides my conviction that all forms may be found in nearly every locality if one occupies oneself specially with them.

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169. **Festuca rubra** L. var. **arenaria** (Osb.).

Lge. Consp. Fl. Grœnl. p. 180 & 302. Hartz Fanerog. p. 352. Dusén Gefässpfl. p. 62.

Northern coast,p.: Kap Borlase Warren (H. & K.)!
Northern inlet-p.: Kjerulf Fjord (D.)! Forsblad Fjord (A. G. N.)! Kap Seaforth, Fleming Inlet (H. & K.)!
Scoresby Sund: Jameson Land, common in the interior of the inlets (H.)! Hurry Inlet (H. & K.)!

Appears especially in sandy and gravelly flats and is down forming where there is sand-drift. It is more frequent in the interior of the country than on the outer coast because localities convenient for it are oftener found there than on the cleansed coast.

Fam. 30. Lycopodiaceae.

170. **Lycopodium Selago** L. f. **appressa** Desv.

Lge. Consp. Nr. 356 p. 303. Dusén Gefässpfl. p. 62. Hartz Fanerog. p. 352.

Northern coast-p.: Sabine Ö (D. H. & K.)! Hold with hope (H.)!
Northern inlet-p.: Sofia Sund (A. G. N.)! Scott Keltic Ö (D.)! Antarctic Havn (A. G. N.)!
Scoresby Sund: Common (H.)! Hurry Inlet, Jameson Land, Liverpool Kyst (H. & K.)!
Kap Dalton-p.: Turner Sund, Kap Dalton (H. & K.)!
Southern coast-p.: N.-Tasiusak, Itivsalik, Lilleö, Vahls Fjord (K.)!

171. **Lycopodium annotinum** L. f. **pungens** Desv.
(= β alpestre Hartm.) Ostenf. Fl. arct. p. 12.

Lge. Consp. Fl. Grœnl. p. 184. Hartz Fanerog. a. Karkrypt. p. 352.

Scoresby Sund: Not found in the coast region north of 66° 20′ lat. N. (H.)!

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172. **Lycopodium alpinum** L.

Lge. Consp. Fl. Grl. p. 184 & 303. Hartz Fanerog. p. 352.

Scoresby Sund: Not found on the coast region north of 66° 20′ lat. N. (H.)!

Fam. 81. Polypodiaceae.

173. **Aspidium fragrans** (L.) Sw.

Ostenf. Fl. arct. p. 5. Lastræa fragrans L. Lge. Consp. p. 186 & 305. Hartz Fanerog. p. 352.

Scoresby Sund: Only in Bregnepynt leaves of the length of 10—12 ctm. (H.)!

174. **Cystopteris fragilis** (L.) Bernh.

Lge. Consp. Fl. Grl. p. 188 & 306. Hartz Fanerog. a. Karkrypt. p. 352. Dusén Gefässpfl. p. 63. Ostenf. Fl. arct. p. 6.

Northern coast-p.: Sabine Ö (D. H. & K.)! Clavering Ö, Jackson Ö (C. & P. D.)! Hold with hope (D.)!
Northern inlet-p.: Franz Joseph Fjord (C. & P.)! Kjerulf Fjord, Ruth Ö, Scott Keltic Ö, Forsblad Fjord (D.)! Kap Brown.
Scoresby Sund: Common (H.)!
Kap Dalton-p.: Turner Sund, Kap Dalton. Not observed between 69° 25′ and 66° 20′ lat. N.

175. **Woodsia ilvensis** (R. Br.).

Gelert in Ostenf. Fl. arct. p. 7. Lge. Consp. Fl. Grœnl. p. 188 & 307. Hartz Fanerog. p. 352. Dusén Gefässpfl. p. 63.

α. rufidula (Michx.) Kock. W. ilvensis R. Br.

Northern coast-p.: Sabine Ö (H. & K.)!
Scoresby Sund: Common (H.)! Hurry Inlet; common (H. & K.)!
Kap Dalton-p.: Turner Sund (H. & K.)!
Southern coast-p.: Kap Warming, Ikerasarmiut, Lilleö, Vahls Fjord (K.)!

β. alpina (Bolton) Ascherson & Gräbner. W. hyperborea R. Br.

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Northern inlet-p.: Franz Joseph Fjord (C. & P.)!
Scoresby Sund: Common (H.)! Hurry Inlet (H. & K.)!

γ. glabella (R. Br.) Trautv. W. glabella R. Br.

Northern coast-p.: Sabine Ö (D.)! Hold with hope (H.)! Kap Borlase Warren (D.)!
Northern inlet-p.: Scott Keltic Ö (D.)! Polhems Dal, Forsblad Fjord (H. & K.)! Fleming Inlet (H. & K.)!
Scoresby Sund: Röde Ö (H.)! Hurry Inlet (D.)!

Fam. 32. Ophioglossaceæ.

176. **Botrychium Lunaria** (L.) Sw.

Lge. Consp. Fl. Grœnl. p. 190 & 307. Hartz Fanerog. and Karkrypt. p. 353. Ostenf. Fl. arct. p. 2.

Northern inlet-p.: Fleming Inlet, Pingels Dal (H. & K.)!
Scoresby Sund: Gaaseland (H.)!

Fam. 33. Equisetaceae.

177. **Equisetum variegatum** Schleich.

Lge. Consp. Fl. Grœnl. p. 191. Hartz. Fanerog. p. 353. Dusén Gefässpfl. p. 63.

Northern coast-p.: Sabine Ö (D. H. & K.)! Kap Borlase Warren (H. & K.)!
Northern inlet-p.: Kjerulf Fjord (D.)! Ruth Ö, Scott Keltic Ö (A. G. N.)! Forsblad Fjord (D.)! Kap Seaforth, Fleming Inlet (H. & K.)!
Scoresby Sund. Common (H.)! Hurry Inlet; common (H. & K.)!
Kap Dalton-p.: Turner Sund, Kap Dalton (H. & K.)!

β. anceps Milde. Eq. scirpoides Hartz, Buchenau & Focke l. c.

Northern coast-p.: Sabine Ö (all travellers)! Lille Pendulum Ö (D.)! Clavering Ö (D.)! Hold with hope (H.)! Kap Borlase Warren (H. & K.)!
Northern inlet-p.: Kap Seaforth (H. & K.)!

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Scoresby Sund: Common (H.)! Hurry Inlet; common (H. & K.)! Kap Dalton-p.: Kap Dalton (H. & K.)!

Not noted between 69° 25′ and 66° 20′ lat. N.

178. **Equisetum arvense** L.

Lge. Consp. Fl. Grœnl. p. 191. Hartz Fanerog. p. 352. Dusén Gefässpfl. p. 63. Ostenf. Fl. arct. p. 10.

β. borealis Milde.

Scoresby Sund: Common (H.)! Hurry Inlet; common (H. & K.)! Kap Dalton-p.: Kap Dalton (H. & K.)!

γ. decumbens C. F. W. Mey. (f. alpestre Wbg.)

Commonly extended over the whole of the coast, noted by all travellers.

δ. campestre F. Schultz.

Scoresby Sund: Jameson Land (H.)!

ε. rivulare Huth. (f. arctica Rupr.).

Scoresby Sund: Hurry Inlet (H. & K.)!

15—4—1905.

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VI.

List

of Phanerogams and Vascular Cryptogams
found in the

Angmagsalik District

on the East coast of Greenland between
65° 30′ and 66° 20′ lat. N.

By

Chr. Kruuse.

1906.

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Introduction.

The plants mentioned in this list were mainly collected during the two Greenland Expeditions of Amdrup and during a third journey undertaken by me, in the years 1898—99, 1900 and 1901—02. They were mostly collected and determined by myself. The plants found by Berlin and Nathorst during the short stay of "Den andra Dicksonska Expeditionen" in Kong Oscars Havn (Tasiusak) in 1883 are also entered in the list. They are published partly in the description of this expedition, partly in Kgl. Sv. Vetenskaps-Akademiens Handlingar og Bihang (see Literary List). I have also embodied the small collection brought home by Mr. Knutsen from the Danske Konebaads-Expedition in 1883—85 and published in Medd. om Grønl. III & IX together with the species found by Cand. Bay during the Expedition of Ryder in 1892 at Tasiusak and published by Mag. scient. N. Hartz in Medd. om Grønl.

The limits of the district were traced from botanical and practical reasons. The northern limit is purely botanical and climatic, being distinctly expressed at Kap Wandel on abt. 66° 18′ lat. N. Here the coast becomes wider, the current that farther northward has kept the ice to the land now turns out, the inlets towards the south are broad and deep. The most northern points I have visited are at the inner end of the Sermilik inlet on about the same latitude, and I have therefore traced the limit at the "Lille Isfjord" west of Kap Wandel on 66° 20′ lat. N. The southern limit falls through the outer end of the

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Sermilik inlet on 65° 30′ lat. N. and 38° long. W., so that the most southern point examined is the Adloe-Dal at Kap Dan (Naujanguit). The very west side of the Sermilik inlet I have found no opportunity of examining in its outer southern part, and it is therefore natural for me to stop here. However, the limit is scarcely good from a botanical point of view as this west side, as far I can see, must have quite a similar vegetation to the district described here though somewhat influenced by the slight extent of the land free from ice. The right limit ought perhaps to be traced 25′ more west at the western point of the outer end of the inlet, Nukajik.

The district south (west) of this, Inigsalik, will certainly when examined more exactly show a similar character to the region north of 66° 20′ lat. N., the area being narrow between the inland ice and the sea without any belt of rocks and islands along the coast. But certainly it will turn out to be of a more southern type. Practically it is still unknown from a botanical point of view.

This district, Angmagsalik, forms geographically spoken a whole, this part of the coast being characterized by being free from ice on a very broad area, by the large far penetrating inlets and by the numerous islands along the coast among which the Angmagsalik island takes the foremost place. It forms like Scoresby-Sund, an oasis, as it were, on the coast besides so poor.

All inlets and sounds together with the islands except some of those farthest out have been visited and examined though in a very different degree. While for instance the environs of the trading station, Tasiusak, and the ramifications of the Angmagsalik inlet have been relatively thoroughly examined and will scarcely contribute any more to the flora of the Phanerogams, several of the most eastern points were only visited once, abt. 2 hours for every locality. Still, this is but of slight import, for I have when staying for a rather long time

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(11 days) on Stenö in 1899 convinced myself that the flora of the outer coast may be perfectly well collected at such a short visit, and in 1902 I have got at the same result through controlling visits at localities formerly untrodden.

The localities examined are in enumeration of the localities arranged in a series from East to West, the district having its main coast in this direction and also its greatest extent, while the extreme points are at a distance of hardly one degree of latitude from each other. Within this main arrangement they are arranged from North to South in the individual inlets, so that they may be the more easily found out, many of the localities with characteristic vegetation being on about the same latitude though they are widely separated in east-western direction and belong to different systems of inlets. Latitudes and Longitudes are stated, partly according to the maps published in Medd. om Grönl. IX, X and XXVII, partly, for the localities outside these, according to a map designed by Commander G. Holm, but not published, and if no wider limits are stated they pass as a rule for the landing-place.

Localities.	Lat. N.	Long. W. of Grw.
Adloe	65° 31′	37° 5′
Akiliarisek	66° 18′	37° 35′
Aluit	65° 36′	37° 11′
Amagâ (Præstefjæld)	65° 38′	37° 37′
Amagak	66° 18′	37° 25′
Amakâ (Kap Hörring)	65° 38′—39′	37° 34′
Amitsuarsik	65° 36′	37° 23′
Anava	65° 36′	37° 10′
Depot Ö	66° 7′	35° 31′
Elvbakker	65° 37′	37° 34′—40′
Eskimo Ö	66° 15′	35° 15′
Grus Ö	66° 2′	35° 45′
Ikatek	65° 56′	36° 34′
Ikerasak Fugleholme	65° 49′	36° 50′
Ikerasarsik	65° 35′	37°
Ikerasausak	66° 0′—5′	37° 20′—30′

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Localities.	Lat. N.	Long. W. of Grw.
Ingmikertok	65° 45′	36° 59′
Ingmikertorajik	65° 54′	37°
Isi	65° 58′	37° 40′
Jærn Ö	65° 57′	35° 54′
Kanganitsai	65° 56′	37°
Kangarsik	65° 49′	36° 54′
Kangerdluarsikajik	65° 57′	36° 10′
Kangerdlugsuatsiak	66° 16′—19′	35° 17′—27′
Kap Wandel	66° 18′	34° 46′
Kernertok	65° 45′	37° 5′
Kernertuarsuit	65° 42′	37° 12′
Kingak Angmagsivik	65° 57′	37° 1′
Kingorsuak	66° 5′—10′	37° 5′—15′
Kordlortok Sö	65° 41′	37° 31′
Kuarmiut	65° 52′	37° 35′
Misutok	66° 0′	36° 58′
Moræne Ö	66° 2′	35° 39′
Nigertusok	66° 18′	34° 53′
Norsit	65° 33′	37° 8′
Nunakitit	65° 35′	37° 10′
Sarfak	65° 55′	36° 15′
Sarfakajik	65° 38′	37° 25′
Sermilik Vejen	65° 39′	37° 40′
Sierak	65° 56′	37° 5′
Smalsund	65° 59′	35° 50′
Sten Ö	66° 3′	35° 31′
Stor Ö	66° 15′	35° 22′
Tasiusak	65° 37′	37° 33′
Tasiusarsik kitdlek	65° 37′	37° 15′
Tasiusarsik i Angmagsalik Fjord	65° 47′	37° 4′
Tiningnekelak	65° 54′	37° 40′
Tunok	65° 53′	36° 45′—50′
Umivik	65° 39′	37° 5′
Unartok	65° 52′	37° 27′
Utorkarmiut	65° 54′	36° 18′
Ödesund	66° 10′	35° 23′

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According to the collections of Berlin and Knutsen in 1883 and 84 we knew from Angmagsalik 109 species, to which Nathorst in a later work adds still 2 species, thus in all 111. To these Hartz adds 5 on the basis of the collections of Bay, so that 116 species were known from the district in 1892 (not as stated by Hartz (l. c. p. 392) 120). Of these 116 species are omitted *Triglochin palustre*, as well as *Draba corymbosa* and *Campanula groenlandica*, that are not or at any rate in this list are not considered different as to species from severally *Draba hirta* and *Campanula rotundifolia*, after which the number of known species is reduced to 113 species. In this list are mentioned 183 species, so that the number has been added to with 62 %, though the conception of species has been taken in a very wide sense. Thus I have with Gelert united *Draba rupestris* and *corymbosa* with *Draba hirta*, *Glyceria Borreri* with *G. distans*, *Festuca duriuscula* with *F. ovina*, *Campanula groenlandica* with *C. rotundifolia*, and *Woodsia ilvensis*, *glabella* and *hyperborea* are considered to be one species, while the *Alchimilla* forms *filicaulis, alpestris, Wichurae* and *glomerulans* are considered to be separate species. In spite of that the augmentation is very considerable, and though the number has not been increased to the double of it, as foretold by Warming, still Nathorst was very far from being right when he declared that, what might still be found would be only single "plantae rarae" of no importance for the flora as a whole. No less than 52 of the species added are plants of a wide distribution which within Greenland itself have been found in very different localities and bear a prominent part in the physiognomy of the vegetation[1]), and even within the district given

[1]) They are:

Dryas octopetala v. integrifolia.	Alsine verna.
Potentilla nivea.	Cochlearia officinalis
*Potentilla tridentata.	Draba alpina.
*Epilobium lactiflorum.	Draba aurea.
*Epilobium Hornemanni.	Draba nivalis

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15 signed with * of these (or 10 % of the original number) are species giving the tone among the others.

The rest (17)[1]) of the new found species must both within this district and on the whole in Greenland be characterized as rare plants, and finally one species, *Sedum acre*, has not formerly been found in Greenland. The knowledge of the flora of East Greenland has thus been augmented to a rather considerable degree. In a later work I shall examine more exactly the importance of this for the judgment of the phytogeography of the region.

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*Draba Fladnizensis.
Draba arctica.
Draba incana.
*Cardamine bellidifolia.
Cardamine pratensis.
Papaver radicatum.
*Ranunculus pygmaeus.
*Coptistrifolia
Sedum villosum.
Pedicularis lanata.
Mertensia maritima.
Pyrola rotundifolia v. grandiflora.
*Cassiope tetragona
Campanula uniflora.
Antennaria dioica.
Arnica alpina.
Rumex acetocella.
*Salix arctica v. groenlandica.
Habenaria albida.
Habenaria hyperborea.
Juncus castaneus.
Juncus arcticus.
Scirpus caespitosus.
Elyna Bellardi.
Carex capitata.
Carex microglochin.
Carex rupestris.
Carex brunescens.
Carex atrata.
Carex supina.
Carex rotundata.
*Carex pedata.
*Agrostis canina
Aira flexuosa.
Glyceria angustata.
*Glyceria distans.
*Lycopodium annotinum.
Equisetum variegatum.
*Equisetum arvense.
*Aspidium Dryopteris.
Aspidium Phegopteris.
Woodsia ilvensis.

[1]) They are
Potentilla emarginata.
Alchimilla filicaulis.
Alchimilla alpestris.
Alchimilla Wichura.
Callitriche hamulata.
Draba crassifolia.
Ranunculus reptans.
Sagina caespitosa.
Saxifraga aizoides.
Gentiana tenella.
Galium palustre.
Hieracium dovrense.
Potomogeton filiformis.
Juncus triglumis.
Juncus bulbosus.
Lycopodium complanatum chamacyp.
Botrychium lanceolatum.

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In arranging the plants I have followed Lange's "Conspectus Flora Groenlandica" (Meddelelser om Grönland III) by reason of the comparison with this fundamental work though it has become antiquated in several respects (f. inst. the maintenance of Apetalae as a special group). I have also followed the nomenclature of Lange as far as possible, and I have innovated only where newer works have necessitated my doing so. These innovations are greatest within the family *Cruciferae* where I have followed Gelert's revision for the genera *Draba* and *Cochlearia*, *Compositae*, determined by Amanuensis Dahlstedt in Stockholm, *Cyperaceae*, determined by Inspector of the Botanical Museum at Copenhagen, C. H. Ostenfeld, the other orders of Monocotyledones and *Filices*, where the limitation of the species stated in "Flora Arctica" has been followed. In several cases especially when determining the large genera I have not been content with the result obtained, but I have been obliged to stop at what I considered a preliminary position, as the systematising cannot be final, until the plants have been cultivated and observed continually through years in the arctic countries. There is now every prospect of this going to be done at the new established Danske Arktiske Station in Disco, and it is my hope that also systematic questions will be treated there.

In composing this list I have besides those cited in Lange's Conspectus p. XVI ff. employed the following works:

Berlin: Kärlväxter insamlade under den svenska Expeditionen til Grönland 1883. Öfversigt af Kungl. Vetenskaps-Akademiens Förhandlingar, No: 7, p. 17.

Engler und Prantl: Die natürlichen Pflanzenfamilien.

Gelert: Notes on arctic Plants. Botanisk Tidsskrift 21. Bd., 3. Hefte. København 1898.

— Studier over Slægten Batrachium. Botanisk Tidsskrift 19. Bd. p. 7. København 1894.

Gunnar Andersson & H. Hesselman: Bidrag till Kännedomen om Spetsbergens och Beeren Ejlands Kärlväxtflora. Bihang t. K. Svenska Vet. Akad. Handl. Bd. 26. Afd. III. No: 1.

Hartz, N.: Fanerogamer og Karkryptogamer fra Nordøst-Grönland c. 75°—70° N. Br. og Angmagsalik c. 65° 40′ N. Br. Meddelelser om Grønland 18. Hefte.

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Haussknecht: Monographie der Gattung Epilobium 1884.
Hegelmayer: Monographie d. Gattung Callitriche. Stuttgart 1864.
Lange, Joh.: Conspectus Florae Groenlandicae. Meddelelser om Grønland 3. Hefte. København 1890.
— Bemærkninger om de i 1883—85 indsamlede Planter paa Østkysten af Grønland. Medd. om Grønl. 9. Hefte. 1889, p. 271.
Nathorst, A. G.: Botaniska anteckningar från nordvestra Grönland. Öfversigt af Kungl. Vetenskaps-Akad. Förhandlingar 1884, No: 1.
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Ostenfeld, C.: Flora Arctica. I. København 1902.
Rosenvinge, L. Kolderup: Andet Tillæg til Grønlands Fanerogamer og Karsporeplanter. Medd. om Grønl. 3. Hefte. København 1892.
Raunkiær, C.: De danske Blomsterplanters Naturhistorie 1.
— Dansk Excursions Flora. 1890.

I beg the many botanists who during the composing and else have assisted by word and deed to receive my best thanks. I shall name here Professor E. Warming, who always has assisted me, Professor Wittrock, Stockholm, who left the rich collections of the Rigsmuseum to my disposal, Amanuensis Dr. R. Fries, who assisted me at the named museum, Amanuensis Dahlstedt, who kindly determined the genera *Taraxacum* and *Hieracium*, Inspector of the museum at Copenhagen mag. sc. C. H. Ostenfeld, who determined *Cyperaceae* and mag. sc. C. Raunkiær, who determined *Juncus bulbosus*.

Randers, the 25th of March 1906.

Chr. Kruuse.

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Fam. 1. Rosaceae.

1. **Dryas octopetala** L., var. **integrifolia** (M. Vahl) Hartz Fanerog. p. 320.

D. integrifolia Lge. Consp. Fl. Groenl. p. 3 & 234. Rosenv. Till. p. 654.

In table-land, rather rare, high up on the mountains and most often on the shady side, not observed below 300 m. above the level of the sea. In bloom from the 28th of June—24th of July, in fruit from the 13th of July.

Kap Wandel, Amagak in Sermilik, Kilikitak, Kakasuak and the westside of Kingorsuak, Tunok, Adloe, Anava, Kordlortok, Orsuluiak near Tasiusak 65° 35′ n. Br.

All specimens have entire leaves, as a rule closely convoluted; in favorable localities the young leaves are plane and obtain a length af about 10 mm. and a breadth of until 4 mm. In unfavourable (dry) localities all leaves are involuted and obtain only a length of 5—6 mm. and a breadth of 2 mm. The species does not flower every year and not until the tufts have reached a diameter of more than 5 ctm. The flowers are rather small (15—20 mm. in diameter) and shortstalked (the stalks 2—3, rarely 4 ctm.). The dust well developped. Sets, though rarely, well-developped fruit; old fruit-stalks from a previous year are common. The tufts are very low, 1—2 ctm. thick, having rarely a diameter of 20 ctm.; older specimens are always dead in the middle and much lichenized. The species evidently thrives badly within the territory examined. Dryas octopetala L. has not been found anywhere.

2. **Potentilla palustris** (L.) Scop.

Lge. Consp. Fl. Groenl. p. 3 & 234. Comarum palustre Berlin Kärlv. p. 32. Hartz Fanerog. p. 391.

Rather rare; on the banks of brooks and lakes, and in pools. Flowers sparingly in August. The shoots are until 60 ctm. long.

Kingorsuak, Ikerasausak, Tunok, Kuarmiut, Tasiusak. Kong Oscars Havn (Berlin)!

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3. **Potentilla anserina** L. *β groenlandica Ser.*

Lge. Consp. Fl. groenl. p. 5 & 234. Berlin Kärlv. p. 33.

Rather rare, on clayey and sandy flats on the beach.

Kingorsuak in several places, Ikerasausak, Tunok, Kordlortok and Grönlænderpynt at Tasiusak.

Is as a rule very low, compressed with 3—4 ctm. long leaves, with 2—3 couples of leaflets and abt. 20 ctm. long, 4—5 jointed offshoots, but in favourable localities vigorous specimens appear with 12 ctm. long leaves (5 couples of leaflets) and 50—60 ctm. long offshoots with 10—12 ctm. long joints. Flowers abundantly and sets many fruits. In spring the leaves are strongly reddish brown, later in the year they commonly assume a somewhat greenish colour. Flowers from the middle af July to the middle of August, with fruit in August.

4. **Potentilla maculata Pour.**

Lge. Consp. Fl. Groenl. p. 6 & 234. Berlin Kärlv. p. 33. Hartz Fanerog. p. 391.

α. vulgaris.

On herby slopes and in heath, rather common over the whole district.

Kong Oscars Havn (Berl.)!, Tasiusak (Bay.)!, Kap Wandel, Nigertusok, Smalsund, Kingorsuak, Ingmikertorajik, Akiliarisek, Kuarmiut, Tunok, Elvbakker a. sev. pl. at Tasiusak, Adloe, Kap Dan, Misutok.

β. hirta Lge.[1]) Falkefjæld at Kingorsuak, Kangerdluarsikajik.

[1]) There seems to me to be no reason of separating with Rydberg (Further studies on the *Potentilla*) this variety as a distinct species (*P. Langeana* Rydb.), as the characters referred to are very variable, and numerous transitions are found. In the same plant the outer calyx and the leaf denticles may be obtuse and acute, the sepals oval or oval-lanceolate, and even the hairiness of the upper surfaces of the leaves and the under calyx are very variable. Completely glabrous leaves are rare. Neither do these characters vary in a parallel way; in almost glabrous specimens (shade-loving forms) the stem is upright with upright branches, the leaf denticles obtuse, while outer calyx and calyx are lanceolate and more or less acute.

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5. **Potentilla emarginata Pursh.**

Lge. Consp. Fl. Groenl. p. 8 & 235.

Found only in one place, Kakasuak at Kingorsuak, 66° 8′ lat. N. 2 small sterile specimens.

6. **Potentilla nivea** L.

Lge. Consp. F. Groenl. p. 8 & 235.

Found only in one place:

The west side of Kingorsuak, 66° 8′ lat. N., on a humid, shady rocky wall.

In the above named locality two 20 ctm. high flowering specimens, belonging to the main species, were found on the 27th of July. In spite of zealous searchings I did not succeed in finding the species anywhere else, so that it must at least be very rare here, though in West Greenland it grows far more towards the south.

7. **Potentilla tridentata** Soland.

Lge. Consp. Fl. Groenl. p. 10 & 236.

In table-land, on rocks, on herby slopes, rather rare, between 66° and 67° 5′ lat. N.

Kingorsuak, Ikerasausak, Akiliarisek.

The species prefers the interior of the country and thrives especially in cracks of the rocks where there is very dry some time of the year, but it has also been found on the outer coast in a few places. It is rather rare, but grows gregariously where it appears. Flowers in the latter half of July; fruit ripens in August; old fructifications are common.

8. **Sibbaldia procumbens** L.

Lge. Consp. Fl. Groenl. p. 11 & 236, Berlin Kärlväxter p. 34. Hartz Fanerog. p. 391.

Common on herby slopes and rocks of the table-land above the slopes. Flowers from the 20th of June—the 1st of Aug.; sets abundant fruit that remains throughout the winter; old empty fructifications are common. Forms often dense plantations of a height of abt. 5 ctm.

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9. Alchimilla alpina L.

Lge. Consp. Fl. Groenl. p. 11 & 236. Berlin Kärlv. p. 34. Hartz Fanerog. p. 391.

Nigertusok, Akiliarisek, Kingorsuak, (Kangarsuk) (Knutsen), Jærn Ö, Kong Oscars Havn (Berl.), Tasiusak in several places.

Alchimilla vulgaris L.

Lge. Consp. Fl. Groenl. p. 11 & 236. Berlin Kärlv. p. 34. Hartz Fanerog. p. 391.

Of this polymorphic species several forms appear within the district; they are all well separated without any distinct transitions and seem to keep constant. The distinguishing characters are rather small, but in larger plantations it is possible to distinguish the individual sub-species by their peculiar structure.

I. **The calyx hairy.**

10. Alchimilla filicaulis (Buser).

The stems glabrous, at the top capillary like the branches of the inflorescence. The root-leaves plane with open basis, bluish grey, 7-lobed, the midlobe with 6—9 denticles on each side. The calyx infundibuliform or at the top oval-cylindric, hairy with scarce protruding hairs.

Not common; on herby slopes between 66° 19′ lat. N. and 65° 35′ lat. N.; 10—15, exceptionally 50 ctm. high. New for Greenland.

Akiliarisek, Kingorsuak, Tunok, Sarfakajik, at Kordlortok Sö, Elvbakker at Tasiusak, Adloe.

f. *vestita Buser.* Stems hairy; very rare, in herby slopes.

The tent place at Kingorsuak, Cassiope Fjæld, Amagâ and Elvbakker at Tasiusak.

II. **The calyx glabrous.**

† **The lower half of the leaf nerves glabrous, the upper half adpressed hairy on the under side**

11. Alchimilla alpestris (Schmidt).

The stems and the stalks of the root-leaves almost glabrous or downwards clothed with adpressed hairs. The leaves glabrous

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(except the nerves). The denticles of the upper stem leaves are directed towards the point of the segment of the leaf.

On humid, well sheltered herby slopes, up to 50 ctm. high, found only in one place, and not before observed in Greenland.

Tasiusak, Misutok 66° lat. N.

†† The leaf nerves hairy in their whole length with adpressed shining hairs.

*The leaves glabrous on their upper surfaces (but often slightly hairy at the bottom of the incisions).

12. **Alchimilla Wichurae** (Buser).

The underside of the leaves adpressed hairy. Dark green, folded with sharp keels.

On humid well sheltered herby slopes with high snow cover in winter; rather rare between 66° 20′ and 65° 35′ lat. N.; 15—22 ctm. high. New for Greenland.

Kap Wandel, Nigertusok, Ikerasausak, Kuarmiut, Tasiusarsik Kitdlek, Nordfjord and Elvbakker at Tasiusak.

** The upper surface of the leaves hairy, at least along the edge.

13. **Alchimilla glomerulans** (Buser).

A. vulgaris f. subsericea Lge. Consp. Fl. Groenl. p. 237. A. vulg. Hartz Fanerog. p. 392. Berl. Kärlv. p. 34.

The most common form of the east coast; widely distributed on herby slopes and in copses of willows and found up to 1000 m. above the level of the sea; collected by all former travellers.

Kong Oscars Havn (Berlin, Bay), Kingorsuak (The name of Kangarsuk in Lange l. c. is due to a misreading). It has already been found on 63° lat. N. (Eberlin) south of Angmagsalik, but no other form of A. vulg. is found in the collections of the Bot. Mus. of Copenhagen.

Fam. 2. Halorhagidaceae.

14. **Hippuris vulgaris** L.

Lge. Consp. Fl. Groenl. p. 13. Rosenv. Till. p. 658. H. vulg. v. maritima Lge. l. c. 237. Berlin Kärlv. p. 36. Hartz Fanerog. p. 391.

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In low watered ponds, rare.

Tasiusak (Bay.), Kong Oscars Havn (Berl.), ponds in Elvbakker and on Amakâ, Tunok.

The number of the leaves of the whorls varies from 4 to 11, the length of the air leaves is between 5 and 12 mm., the breadth 1,5—2 mm., the water leaves vary between 5 and 12 mm. (length) and 1,5—3 mm. (breadth), and these variations may appear together in the same specimen in all combinations. It is therefore impossible to distinguish between the main form and f. *maritima* (Hellen) Hartm. 20—50 ctm. high, with up to 1,3 m. long rhizomes creeping at a depth of 4—5 ctm. in sand and mud on ground covered with no other plants. The air shoots begin to appear early in June. Flowers though rarely in July. Sets ripe fruit. Seed plants with 5—6 ctm. long rhizomes and 1—4 strict 2—3 ctm. high shoots were observed on the 15th of August 1902.

Fam. 3. Callitrichaceae.

15. **Callitriche verna** Kütz.

Lge. Consp. Fl. Groenl. p. 14 & 238, Berlin Kärlväxter p. 37.

α. genuina. — Kordlortok.

β. minima (Hpp.).

Kong Oscars Havn (Berlin), ponds in Elvbakker and on Amakâ, Ingmikertok in Angmagsalik Fjord in a dried up pool on the camp, Ikerasak Fugleholme.

16. **Callitriche hamulata** Kütz., var. **trichophylla** Kütz.

In a pond with abt. 35 ctm. water on sandy and muddy ground. 3—10 ctm. high, with fruit on the 30th of Sept. 1901.

Found only in one place, Sparganium-Dam in Elvbakker at Tasiusak.

Fam. 4. Oenotheraceae.

17. **Epilobium anagallidifolium** Lam.

Haussk. Monographie p. 152, Rosenvinge Till. p. 659. E. alpinum. Lge. Consp. p. 14 & 238, Berlin Kärlväxter p. 35.

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Nigertusok, Kangerdlugsuatsiak, Utorkarmiut, Ikatek, Sierak, Tasiusarsik in Angmagsalik Fjord, Tunok, Amagâ, at Kordlortok Sö, the brook of the colony, Kong Oscars Havn (Berlin).

Rare. Forms cover in spots in humid places as the banks of brooks, at the foot of black stripes, on herby slopes and in manured places. It is 2—5 ctm. high, but fructiferous specimens may exceptionally reach 11 ctm. Flowers in July, sets abundant fruit.

18. **Epilobium lactiflorum** Hausskn.

Lge. Consp. Fl. Groenl. p. 238.

Rare, on herby and grassy slopes exposed to the south with high snow cover in winter. 10—20 ctm. high, fructiferous up to 40 ctm. Flowers in July, sets abundant fruit.

Kangerdlugsuatsiak, Tunok, Sierak, Tasiusarsik in Angmagsalik Fjord, Sarfakajik.

19. **Epilobium Hornemanni** (Rchb.).

Hausskn. E. alsinefol. Lge. Consp. Fl. Groenl. p. 15 & 239.

On herby slopes, not common between 66° 10′ and 65° 35′ lat. N., snow covered in winter. Flowers July—August, sets abundant seed. 10—20, sometimes up to 50 ctm. high.

Kangerdluarsikajik, Ikatek, Kingorsuak, Sierak, Tunok, Sarfakajik, at Kordlortok Sö, Amagâ, Tasiusarsik in Angmagsalik Fjord.

20. **Chamaenerium angustifolium** (L.) Scop.

Lge. Consp. Fl. Groenl. p. 16 & 239, Berlin Kärlv. p. 35, Hartz Fanerog. p. 391.

Grows gregariously on herby slopes close to the foot of the rocks and in copses of willows, obtains commonly a height of 25—30 ctm., but is on the outer coast only 10, in the interior up to 70 ctm. high.

Between 66° 19′ and 65° 35′ lat. N.

Kangerdlugsuatsiak, Eskimo Ö, Kangerdluarsikajik, Kingorsuak, Ikerasausak, Akiliarisek, Ingmikertok, at Kordlortok Sö, Kuarmiut, Tasiusak (Kong Oscars Havn) Berl. Bay, common in Elvbakker.

f. *foliosa*. Hausskn. Monogr. p. 37.

Kingorsuak, Tasiusarsik in Angmagsalik Fjord, Amakâ at Kordlortok.

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f. *ramosa*. Hausskn. l. c. p. 38. Amakâ at Kordlortok.

f. *stenophylla*. Hauskn. l. c. p. 38.

In sand at the foot of rocks in the neighbourbood of the trading station (Tasiusak).

21. Chamaenerium latifolium (L.) Spach.

Lge. Consp. Fl. Groenl. p. 16 & 239, Berlin Kärlv. p. 35. Hartz Fanerog. p. 391.

In table-land, heath and on herby slopes.

The following forms appear:

α. f. *platypetala* Hausskn. Monogr. p. 191.

Tasiusak (Berlin, Bay).

Commonly distributed between 66° 20′ and 65° 35′ lat. N. as well on the coast as in the interior on gravelly slopes, on humid sand along the banks of brooks etc.; until 30 ctm. high. Flowers from the middle of July till the middle of August, sets abundant fruit.

β. *stenopetala* Hausskn. l. c.

More rare than the main form, and in more favourable localities, herby slopes and humid sand.

Akiliarisek, Kingorsuak, Kangerdluarsikajik, Tunok, Kordlortok Sö, Amaga, Elvbakker, Tasiusak (Hartz).

γ. f. *brevifolia* Hausskn. l. c.

In shady places in cracks.

Kordlortok, Kakasuak, Tunok.

δ. f. *venosa* Hausskn. l. c.

In humid shady localities.

The west side of Kingorsuak, Tasiusak, Amagà.

The forms named her are not completely constant and transitions are often observed between all af them, but as they appear ecologically in a different manner I put them down here.

Fam. 5. Empetraceae.

22. Empetrum nigrum L.

Lge. Consp. Fl. Groenl. p. 181, Berlin Kärlväxter p. 60. Hartz Fanerog. p. 391.

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Widely distributed everywhere in all formations; is found as well on the skerries farthest out in the sea, as in the interior on the border of the inland ice and on the highest ascended tops. Forms cover of a height of up to 20 ctm.; flowers late in June, sets abundant and ripe fruit, but only in favourable localities; many fruits do not attain ripeness and remain throughout the winter, they dry up next spring.

Fam. 6. Caryophyllaceae.

23. Silene acaulis L.

Lge. Consp. Fl. Groenl. p. 19 & 241. Berlin Kärlväxter p. 28, Hartz Fanerog. p. 391.

Common on gravelled and sandy ground in table-land and heath, especially on sloping ground, avoiding humid and occasionally inundated places, is often snowless in winter, werefore older tufts often die off at the top or become eroded from the NE. side in the form of a horse-shoe. The tufts become up to 40 ctm. in diameter and 10 ctm. high, but are usually not more than severally 20 and 5 ctm., on lichen flats only 2—8 ctm. broad and 1 ctm. high. The tufts flower every year, 15th of June—15th of August, but only with a slight number of flowers; the flowers are first reddish purple, later pink, and towards fading almost white; really white flowered tufts are very rare. Sets in August abundant seed having the power of germination. Seedlings and young specimens are common. In cracks of rocks a sterile shade-loving form with stretched joints very usually appears.

24. Viscaria alpina (L.) Don.

Lge. Consp. Fl. Groenl. p. 19 & 241. Berlin Kärlv. p. 28.

Widely distributed in table-land, heath and on slopes, but grows always spread and is but a secondary constituent part of the vegetation. The height is 5—20 ctm.; it is sometimes branched and often 3—5 peduncles shoot out from the same zhizome; the inflorescences are 2—4 ctm. long, compact. The number of the lobes of the corolla is very variable, also the colour, from deep crimson to light shades, and towards decay the colour fades a great deal.

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β. albiflora. — Elvbakker at Tasiusak.

γ. pleniflora. — Kong Oscars Havn (Berlin)! Elvbakker.

25. **Sagina Linnaei** Presl.

Lge. Consp. Fl. Groenl. p. 21 & 242. Berlin Kärlv. p. 31.

Not common, in humid places (not in pools), on herby slopes, in table-land and on oozy and stony flats, forms sometimes cover over smaller spots. Up to 5 ctm. high in shady places, for instance among carices and grass, but as a rule only 1—2 ctm. The tufts manystemmed, richly flowering (1 tuft bore 257 flowers and fruits); sets abundant seed, having the power of germination, in August.

Kakausak at Kingorsuak, Sierak, Tunok, Sarfakajik, Kordlortok Sö, Tasiusak, Kong Oscars Havn (Berl.)!

26. **Sagina nivalis** L.

Lge. Consp. Fl. Groenl. p. 22 & 242. Berlin Kärlv. p. 31.

On stony plains and in gravelled and sandy places with scarce vegetation. Not common.

Grus Ö, Kingorsuak on a "cone of debris" in a river, Amagak in Sermilik, Tunok, Ingmikertok, Sarfakajik, Elvbakker, Tasiusak, Grönlænderpynt, Kong Oscars Havn (Berl.)!

27. **Sagina caespitosa** (J. Vahl) Lge.

Lge. Consp. Fl. Groenl. p. 22 & 242.

Very rare; in gravelled and sandy places near the beach.

Sten Ö, Tunok, Adloe at Kap Dan, Grönlænderpynt in Tasiusak.

28. **Alsine biflora** (L.) Wbg.

Lge. Consp. Fl. Groenl. p. 23 & 243. Berlin Kärlv. p. 30.

Widely distributed everywhere on herby slopes and in table-land. The tufts up to 30 ctm. in diameter and with 5 ctm. high flowerstalks, but most often smaller, 5—10 ctm. in diameter. Very richly flowering (a tuft of a diameter of 15 ctm. bore 531 flowers and fruits); even small delicate globular specimens of a diameter of 1—2 ctm. bear numerous flowers. Sets abundant and ripe fruit.

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The flowers are nearly always white, only exceptionally a reddish purple specimen is found. Shade-loving specimens with stretched joints are always sterile.

29. **Alsine verna** Bartl.

Lge. Consp. Fl. Groenl. p. 24 & 243.

Appears in the following forms.

β. rubella (Wbg.).

Kilikitak at Kingorsuak, Anava and Adloe at Kap Dan.

γ. hirta Wormsk.

Kap Wandel, Kakasuak and Falkefjæld at Kingorsuak, Sarfakajik, Kilitilik at Tasiusak.

δ. propinqua (Richards).

Nigertusok, Kilikitak and Falkefjæld at Kingorsuak.

30. **Honckenya peploides** (L.) Ehrh.

Halianthus peploides (L.) Fr. Lge. Consp. Fl. Groenl. p. 26 & 243. Berlin Kärlväxter p. 30.

Kordlortok at Tasiusak.

α. diffusa Horn.

Here and there on the beach and in gravelled places near the sea. Flowers in the latter half of June, sets scarce fruit in August. The tufts may be up to 1 □-mt., but not more than 2—3 ctm. high and incoherent; only exceptionally, and particular in the inner part of the inlets, more than one specimen is found in each locality.

Kingorsuak in several places, Kingak, Sierak, Tunok, Grönlænderpynt in Tasiusak, Kong Oscars Havn (Berl.)!

31. **Stellaria borealis** Big. var. **calycantha** Bong.

Lge. Consp. Fl. Groenl. p. 28 & 244. Berlin Kärlv. p. 30.

Very rare. On herby slopes and in copses; also in humid shady cracks of rocks in sheltered places in the interior; always snowcovered in winter. Flowers in August. Fruit not observed. 10—15 ctm. high, forms as a rule incoherent, soft, but closely entangled tufts, but in the high dense copse of willows near Kingorsuak it was found only with single or at most 3 ascending, thin, up to 40 ctm. high shoots.

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Kingorsuak, the birds' islet near Misutok,. Tasiusarsik in Angmagsalik Fjord, Kuarmiut, Elvbakker near Tasiusak, Kong Oscars Havn (Berl.). Northern limit 66° 8′.

32. **Stellaria humifusa** Rottb.

Lge. Consp. Fl. Groenl. p. 28 & 244. Berlin Kärlv. p. 30.

Not common; on the beach and in birds' islets. The tufts are as a rule small (diameter of up to 5 ctm.) with very short and short jointed stems creeping closely to the ground, but in manured places and in good shelter they may become up to 30 ctm. in diameter. In shade of rocks or algae washed ashore it becomes stretched stem joints (until 3 ctm.) and large leaves (until 12 mm.); but on sand and oozy flats it is utterly small-leaved. Flowers rather sparingly in July, sets ripe fruit.

Tunok, Kingorsuak, birds' islet near Misutok, Sierak, Ikatek, Ikerasausak, Ingmikertorajik, Kingâk, Tasiusak in several places, Kong Oscars Havn (Berl.)!

33. **Cerastium trigynum** Vill.

Lge. Consp. Fl. Groenl. p. 30 & 244. Berlin Kärlväxter p. 30. Hartz Fanerog. p. 391.

Widely distributed in humid places, as well on the coast as in the interior and high up in the mountains, but thrives best on the coast and is fond of the manured spots round Greenland tent and dwelling places, where it often forms a dense cover and colours the ground white with its numerous flowers (diameter of until 15 mm.); sets abundant ripe fruit.

var. *brachypetala* Lge. petalis calyce aequilongis.

Kingorsuak (Kangarsik) (Knutsen).

34. **Cerastium alpinum** L.

Lge. Consp. Fl. Groenl. p. 31 & 245. Berlin Kärlväxter p. 29. Hartz Fanerog. p. 391.

The following forms appear:

a. legitimum Lindbl.

Rather rare on herby slopes and in copses of willows.

Kingorsuak, Kingak Angmagsivik, Tunok, Kuarmiut at Kordlortok Sö and Elvbakker near Tasiusak, Anava.

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β. lanatum Lindbl.

Kong Oscars Havn (Berlin! Bay!). Widely distributed in tableland. Attains in exposed habitat rarely a height of more than 5 ctm.; but in sheltered and fertile (manured) places it may attain 27 ctm. In copses and in shady cracks of rocks it may, as observed by Berlin (l. c.) in South Greenland, become very stretched jointed and assume the habit of *Cerastium alpestre.*

γ. procerum Lge.

In copses of willows and on herby slopes; also on manured ground, up to 35 ctm. high.

At Kordlortok Sö, Elvbakker, round the trading station at Tasiusak.

All forms vary a great deal as regards the length of the corolla, that in proportion to the calyx may be between 5:2 and 1:2.

Fam. 7. Violaceae.

35. Viola palustris L.

Lge. Consp. Fl. Groenl. p. 33 & 246. Berlin Kärlväxter p. 27, Hartz Fanerog. 391.

On herby slopes, grassy slopes and on the banks of brooklets and ponds, rare, 5—15 ctm. high.

Tunok, Kordlortok Sö; the specimens are sterile and small-leaved. Elvbakker and near the trading station in humid hollows covered with Salix herbacea; Sarfakajik, Subularia-Dam, between grassy tufts, Kong Oscars Havn (Berl.)!

It flowers late in July till the middle of the August and has late in August often numerous fully ripened fruits. Cleistogamic flowers appear more often than the great ones.

Fam. 8. Cruciferae.

36. Cochlearia officinalis L.

Gelert: G. Andersson & H. Hesselman Bidr. t. Spetsbergens och Beeren Eilands Kärlväxtflora, Bih. t. K. Sv. Vetensk. Akad. Handl. Bd. 26. Afd. III. Nr. 1. p. 34. C. groenlandica L. Lge.

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Consp. Fl. Groenl. p. 35 & 246, C. fenestrata R. Br. Verm. Schr. Lge. l. c.

β. *groenlandica* (L.) Gel. l. c.

On the beach and on birds' tufts and birds' islets, rare.

Kingak, Ikerasausak.

f. *minor* Lge.

On birds' islets and near the beach, rare.

Sten Ö, Kingorsuak, birds' islet near Misutok, Ingmikertorajik, Anava, Tasiusarsik.

γ. *oblongifolia* (D. C.) Gel.

In manured places, on the border of sea-weed at the beach, rare.

Kingak, Ingmikertok, Sierak, Tunok, Aluit near Kap Dan.

Flowers in June—July, often immensely richly (tufts of a height of 3—4 ctm. and the same diameter may have more than 100 flowers), sets abundant ripe fruit. The species prefers manured places near the beach and may here attain a height of until 20 ctm., but appears never in greater numbers of specimens, certainly owing to the scarce bird life.

37. **Draba alpina** L.

Gelert: Notes on arctic plants. Lge. Consp. Fl. Groenl. p. 371.

Very rare; in table-land, 4—5 ctm. high, flowers from 20th—30th June.

Ikerasausak, Kingorsuak.

f. *algida* (Adams) Gel. l. c.

Kingorsuak, Ikerasausak, Tasiusarsik in Angmagsalik Fjord, Kuarmiut.

Yellowflowered *Drabas* are very rare within the district examined, and the colour is somewhat paler than farther north (Jaune 3; Lacouture, Répertoire Chromatique, Planche VI) but still unmistakable and can by no means be mistaken for any of the whiteflowered ones. The yellowish colour appearing in *Draba Fladnizensis* and *hirta* is secondary (Gelert l. c.), produced by preparation and drying. In nature I never saw any such shade of colour, not even an attempt of it. The species flowers sparingly and sets seed only in slight quantities; on the whole it thrives badly within the district

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examined, certainly on account of the southern position. The southern limit is 66° lat. N.

38. **Draba crassifolia** Grah.

Lge. Consp. Fl. Groenl. p. 38.

On herby slopes. In bloom on the 26th and 27th of July, 2—4 cmt. high with old siliques from the previous year; grows gregariously in humid cracks and on the vertical shady side of small grass-walls.

Found only near Kingorsuak on Kakasuak and on the westside of the inlet.

39. **Draba aurea** M. Vahl.

Lge. Consp. Fl. Groenl. p. 39 & 247.

In table-land preferring gravelly places where there is plenty of water in spring, for instance in wild brooks and among blocks of stone on the sunny side (at a height of 500—700 mt.). Becomes 5—15 ctm., exceptionally 30 ctm. high with 1—4 flowering stems. The leaves in spring reddish purple. Flowers richly late in June and in the middle of July, sets abundant seed, having the power of germination, in August. Rare, but where it is found there are often numerous specimens on a small area. Avoids the outer coast.

Kakasuak near Kingorsuak, Akiliarisek, Ikerasausak.

40. **Draba nivalis** Liljeb.

Lge. Consp. Fl. Groenl. p. 39 & 248.

On rocks, in table-land, rare, 3—8 ctm. high. Flowers from 20th June, in fruit from 1th August.

Kap Wandel, Kingorsuak, Misutok, Tasiusak near the station, Adloe near Kap Dan.

f. *tenella* Lge. (f. elongata Wats.).

Kingorsuak on the westside.

41. **Draba Fladnizensis** Wulf.

Gelert Notes on arctic plants p. 302. D. Wahlenbergii Hartm. Lge. Consp. Fl. Groenl. p. 40 & 248.

Rather common in all formations, as well in the coast region as in the interior. Flowers from the middle of June till the middle

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of August, sets abundant ripe fruit in August. Thickly tufted, most often manystemmed; 3—15 ctm. high, as a rule.

f. *homotricha* Lindbl. — Kuarmiut.

42. **Draba hirta** L.

Lge. Consp. Fl. Groenl. p. 42, Berlin Kärlväxter p. 24. Dr. corymbosa Berl. l. c.

Commonly distributed in all formations, 2—20 ctm. high, flowers from the 20th of June till October, sets abundant ripe fruit. Varies very much. Most common are forms belonging to *D. rupestris* R. Br., but also specimens belonging to the main form are common in sheltered localities; when growing in much exposed habitat, it is reduced to a minimal size (f. *stricta*, f. *trichella*), but it becomes very robust on manured ground with broad dentate leaves and a thick stem. The hairiness varies very much from the thick hairy small forms to almost glabrous. The form and hairiness of the silique is likewise subject to great variations. After having examined the great material at my disposal, I do not, however, consider it possible to keep the individual forms from each other, and therefore I do not note them down. The species is, like the genus of *Draba* on the whole, certainly strongly developping, and possibly forming new species; but these cannot be determined till after having been cultivated through years in favourable localities within the arctic circle. I consider the different forms only climatic and local varieties of one or few fundamental forms.

43. **Draba arctica** J. Wahl.

Lge. Consp. Fl. Groenl. p. 43 & 249.

Kingorsuak on the west side in shade, Kingak Angmagsivik, Sarfakajik.

44. **Draba incana** L.

Lge. Const. Fl. Groenl. p. 44 & 249.

Variat:

f. *confusa* Ehrh.

silicula stellato-puberula non contorta, foliis caulinis dentatis. C. 5 ctm. alt.

Tunok, Ikerasausak.

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f. *contorta* Ehrh.

silicula glabra contorta, foliis omnibus integerrimis (vel caulinis rarius unidentalis). C. 15 ctm. alt.

Akiliarisek.

These two forms are constant in the material before me, but they cannot be kept from each other in the remaining arctic material accessible. All transitions are on the contrary found here.

***Brassica campestris** L.

Introduced with food for hens. Was found in great quantities round the landing place of the trading station and grew in a mixture of mould and barley corn. Flowered richly in July—August. Seeds not observed.

***Sinapis arvensis** L.

Introduced with food for hens. Was found in several places near the colony, partly in kitchen-middens, partly at the landing place, but single specimens were also seen on original soil and attained there a height of 40 ctm. Flowered richly in July—August. Seed not observed.

45. Subularia aquatica L.

Lge. Consp. Fl. Groenl. p. 250, Berlin Kärlväxter p. 26.

In ponds on sandy ground covered with a layer of mud, 1 ctm. thick, is found both submerse and on dried up ground, the largest depth of the water is 40 ctm. It flowers in the middle of August. Developped flowers were not taken but above the water; all submerse specimens had buds, but no open flowers. Fruit was found in abundance on the 10th—the 15th of August, the seeds ripe. The specimens grow gregariously in great numbers, but still with large intervals, forming no cover. They are 1—1,5 ctm. high with 3—5 strict leaves, 4—7 mm., exceptionally 15 mm. long; the peduncles are bent down, the bear 1—3 flowers, of which as a rule only the oldest one (the lowest) sets fruit. The white petals are also found in the submerse specimens. The siliques 1,5—2,8 mm. long, c. 1,5—2 mm. broad, 1—1,5 mm. thick with up to 6 light brown seeds.

Found only near Tasiusak.

Pond at Elvbakker abt. 100 mt. above the level of the sea. Pond in Amakâ abt. 3 mt. above the level of the sea. Kong Oscars Havn near the beach (Berlin)!

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46. Cardamine bellidifolia L.

Lge. Consp. Fl. Groenl. p. 47 & 251.

In table-land, 1—5 ctm. high with many stems: flowers in July, sets abundant ripe fruit. In shady cracks the tufts become very incoherent, the leaves large with long stalks and the flowers rare. Not common, but found as well near the sea as in the interior, more frequent above than below a height of 300 mt.

Kap Wandel, Grus Ö, Kingorsuak in several places, Sierak, Kordlortok and Amagâ near Tasiusak.

47. Cardamine pratensis L.

Lge. Consp. Fl. Groenl. p. 48 & 251.

Very rare; in the edge of brooklets and in low ponds, as well submerse as on the dried up ground. The leaves are 2—5, exceptionally 8 ctm. long with 3—6 couples of leaflets; these are broadly oval (f. *angustifolia* Hook. Fl. boreal. Am. I. p. 45 has not been found). All specimens, even a very great one are sterile, not even peduncle is indicated. It propagates by prolific germs on the leaflets. These loosen themselves from the plant, fold or roll themselves together against the upper surface of the leaf, and the germ appears at the ground of it; still, I have seen a few with the germ in the middle of the upper surface of the midrib. Roots shoot out in a number of 1—6 on the under side of the germ. Especially the end leaflets seem to be particularly disposed to the formation of germs, but I have also observed them on the side leaflets. The formation of germs does not take place, till after the leaf has loosened itself from the mother-plant.

Pool near Kordlortok Sö, ponds and dry pools in Elvbakker and in the colony brook between the houses.

48. Arabis alpina L.

Lge. Consp. Fl. Groenl. p. 48 & 251, Berlin Kärlväxter p. 23, Hartz Fanerog. p. 392.

Widely distributed on herby slopes, on rocks, in fertile places in the heath etc. It flowers from the 15th of June—the 15th of August, with fruit in August, sets abundant ripe seed.

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β. glabrata A. Bl. Norg. Fl.

In copses of willows. — Kingorsuak.

γ. minor Lge. Consp. Fl. Groenl. p. 252.

In table-land high up in the mountains (above 500 mt.); is a very stunted form belonging to the East coast.

Kakasuak and Cassiope Fjæld near Kingorsuak, Kordlortok Fjæld and Sömands Fjæld near Tasiusak.

δ. ruderalis Wormskj. Lge. Consp. Fl. Groenl. p. 251.

On tent places, house ruins, kitchen-middens etc. Is a luxuriant form produced by abundant nutriment.

Kingak Angmagsivik.

Fam. 9. Papaveraceae.

49. Papaver radicatum Rottb.

P. nudicaule. Lge. Consp. Fl. Groenl. p. 52 & 253.

In table-land on the shady side, high up in the mountains (above 500 mt.). 5 specimens were found, among which a large old one with 37 fruits and flowers on 20 ctm. high peduncles; the others were small flowered. The flowers yellow, dust well developped; seed was found but not ripe; still several old capsules indicate that it may be found. With flower on the 27th—28th of July.

The westside of Kingorsuak, Cassiope Fjæld 66° 10′—8′ n. Br.

Fam. 10. Ranunculaceae.

50. Thalictrum alpinum L.

Lge. Consp. Fl. Groenl. p. 53 & 253, Berlin Kärlväxter p. 19. Hartz Fanerog. p. 392.

On herby slopes and in copses of willows, not rare, grows often gregariously covering spots of $^1/_2$ □ mt., but is only of slight importance to the appearance of the vegetation, being mostly hidden by higher plants in whose shade it thrives best. It is 10—12, exceptionally 20 ctm. high with 3—5, exceptionally 10 ctm. long leaves. Flowers richly from the 20th of June to the 1st of August, pollen rich, normal. Sets fruit, but to a slight degree, ripe seeds not observed.

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Kap Wandel, Nigertusok, Kangerdlugsuatsiak, Kingorsuak, Akiliarisek, Tunok, Kuarmiut, Misutok, Elvbakker, Tasiusak (Bay), Kong Oscars Havn (Berlin)!

51. **Batrachium paucistamineum** (Tausch.) var. **eradicata** (Læstad.).

Gelert: Bot. Tidsskr. Bd. 19, p. 28. Hartz Fanerog. p. 392. Ranunc. confervoides Fr. Lge. Consp. Fl. Groenl. p. 54 & 253.

In a pond with c. 40 ctm. deep water on sandy ground covered with a mudlayer abt. 1 ctm. thick numerous 5—15 ctm. high specimens were found. The lobes of the leaves 1,5—2 ctm.; with one (two) flowers; 5—7 mm. in diameter, pollen well developped, sets abundant ripe fruit. A few specimens with very short (4 mm.) thick lobes were found in a dried up place in the pond, evidently a form of drought.

Pond in Amakâ near Kordlortok, Tasiusak (Bay.)!

52. **Ranunculus glacialis** L.

Lge. Consp. Fl. Groenl. p. 54 & 254, Berlin Kärlväxter p. 19. Hartz Fanerog. p. 392.

Widely distributed in table-land, especially on the coast and on the shady side of the mountains in the interior. 5—15 ctm. high. Flowers from the 10th of June—the 1st of August; the flowers 15—30 mm. in diameter, first reddish purple-brownish red, later on red and at last white and widely open. Sets rich ripe fruit in August. The seeds well developped. The plant is fond of humidity and is often found on dripping wet ground on the border of snow drifts. It begins flowering already 2—3 days after having become snowless.

Kong Oscars Havn (Berlin)! Tasiusak (Bay.)!

53. **Ranunculus pygmaeus** Wahlbg.

Lge. Const. Fl. Groenl. p. 55 & 254.

Widely distributed in humid cold shady places as well on the coast as in the interior, but is most often found on the shady side of the mountains and along perennial snow-drifts. This explains that neither Berlin nor Bay has collected it.

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1—12 ctm. high. Flowers from the 15th of June, with fruit from the 10th of July; fruit rich, ripe.

var. *Langeana* Nathorst. Öfvers. af Kgl. Vetensk.-Akad. Förhandl. 1884, No: 1, p. 47.

Kingorsuak the west side.

54. **Ranunculus hyperboreus** Rottb.

Lge. Consp. Fl. Groenl. p. 55 & 254, Berlin Kärlväxter p. 21.

Very rare; in pools. 10—20 ctm. long; the leaves 5—8 mm. broad, 1 at most 2 flowers. Sets ripe fruit. It flowers from the 25th of June; with fruit in August.

Eskimo Ö, Ikerasak Fugleholme, Tasiusarsik, Amakâ and Elvbakker in Tasiusak, Kong Oscars Havn (Berlin)!

v. *ruderalis.*

Coarse, branched, rooting off-shoots shoot out from a little tuft with many leaves. The joints of the stems 2—3 ctm. long. The leaves coarse, 1—2,5 ctm. broad on 2 ctm. long stalks; the peduncles 1—3 ctm. long, the calyx trisepalous, half as long as the tetrapetalous corolla. Stamens and fruit well developped.

The plant is in all parts coarser and shorter than the main species. It must be considered a luxuriant form produced by abundant nutriment and want of water. It bears a certain superficial resemblance to *R. pygmæus.*

Kingak Angmagsivik in a few small half dried up pools on the kitchen-midden.

55. **Ranunculus reptans** L.

Lge. Consp. Fl. Groenl. p. 57.

In a dried up pond on gravelly ground, where the water in winter is abt. 30 ctm. high. Formed a complete, but open cover over some hundred □ mt. The tufts have 1—3 off-shoots with 3—5 ctm. long joints. The leaves are abt. 2 (exceptionally 4—5) ctm. long, at the point 1 (exceptionally 3) mm. broad. The peduncles 5 (1—6) ctm. long, upright. The flowers, 1—4 in each specimen, abt. 5 mm. broad, well developped, sets ripe fruit. The whole plant is reddish brown.

Amakâ near Kordlortok at Tasiusak abt. 3 mt. above the sea.

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56. **Ranunculus acer** L.

Lge. Consp. Fl. Groenl. p. 58 & 255, Berlin Kärlväxter p. 19.

On herby slopes; rare, 30—40 ctm., in very favourable places up to 70 ctm. high; the ground-leaves most often long-stalked (stalks of 15—35 ctm.); the lower stem-leaf short-stalked (1—4 ctm.); the upper one sessile; all leaves hispid. The stem branched at the top, 2-many flowered. The flowers up to 26 mm. in diameter, pollen well developped. Sets abundant ripe fruit.

Tunok, Kordlortok Sö at the foot of a hill, Amagâ, Elvbakker near Tasiusak, Kong Oscars Havn (Berlin)!

var. *Nathorstii* Berlin l. c. p. 20.

On herby slopes; rare.

15—40 ctm. high; with few flowers, the ground-leaves long-scaped, all leaves bi- or tripartite, the segments trilobate, the lobes linear with parallel edges. The segments of the lowest stem-leaf of 1st and 2nd order often stalked and the lobes very long. The whole plant especially towards the top hispid; the hairs compressed and widely separated. Easily recognizable on account of the finely divided leaves; still, distinct forms of transition to the main species are found; some specimens taken late in autumn agree best with the description of Berlin.

Slope on Amagâ, the south side of Kordlortok Fjæld, Kong Oscars Havn (Berlin)!

fl. *pleni.*

The south side of Kordlortok Fjæld near Tasiusak.

57. **Coptis trifolia** Salisb.

Lge. Consp. Fl. Groenl. p. 58 & 255.

On herby slopes and in fertile heath, rather common. 5—10 ctm. high, flowers from the the 25th of June to the 1st of August, with fruit in August; the fructification is not common and takes scarcely place every year. Fruit well developped.

Nigertusok, Kangerdlugsuatsiak, Kangerdluarsikajik, Kingorsuak, Akiliarisek, Ikerasausak, Misutok, Tunok, Norsit, Tasiusak.

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Fam. 11. Saxifragaceae.

58. Saxifraga nivalis L.

Lge. Consp. Fl. Groenl. p. 59 & 256, Berlin Kärlväxter p. 39, Hartz Fanerog. p. 392.

In heath and table-land and on steep rocks, common especially on the shady side of the rocks.

5—20 ctm. high, often with many stems or several specimens closely together. It flowers from late in June till the middle of July, sets abundant ripe fruit.

Kap Wandel, Kangerdlugsuatsiak, Kingorsuak, Akiliarisek, Kuarmiut, Ingmikertok, Tasiusarsik, Elvbakker, Kong Oscars Havn (Berlin)! Tasiusak (Bay)!

var. *tenuior* Wahlenb.

Rather common in humid and cold places near snow-drifts and brooks.

Kingorsuak, Akiliarisek, Ikerasausak, Sierak, Tunok, Kordlortok.

59. Saxifraga stellaris L.

Lge. Consp. Fl. Groenl. p. 60 & 256, Berlin Kärlväxter p. 39, Hartz Fanerog. p. 392.

On sandy and gravelled, humid ground, not common.

2—10 ctm. high, thickly tufted, with many stems; the cymes up to 6-flowered; the diameter of the flowers 5—10 mm., pollen well developped, the capsules shining red or reddish brown. Sets abundant ripe fruit [1]).

Kangerdlugsuatsiak, Kingorsuak, Ikerasausak, Tunok, Tasiusarsik in Angmagsalik Fjord, Sierak, Elvbakker, Grönlænderpynt and Nord-Fjord near Tasiusak, Kong Oscars Havn (Berlin)! Tasiusak (Bay)!

var. *acaulis*.

Thickly tufted, low, each rosette with one sessile flower. In dried up pools, submerse during the greatest part of the year.

Ponds on Amaga near Tasiusak.

var. *laxa*.

The stems undivided, ascending with stretched joints, the leaves

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[1]) The form comosa does not appear within the district.

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lanceolate-spatulate, few-dentated, almost entire. The flowers small, 3—4 in cluster.

In a thick shady copse of willows near Kingorsuak.

var. *viridis*. The leaves small; the fruits green.

Elvbakker near Tasiusak on humid sand.

60. Saxifraga cernua L.

Lge. Consp. Fl. Groenl. p. 61 & 256, Berlin Kärlväxter p. 38.

On herby and grassy slopes and in table-land and on rocks 10—20 ctm. high. The flower 10—12 mm. wide. Commonly distributed in the whole of the district.

Kong Oscars Havn (Berlin)!

var. *ramosa* Gmel.

15—30 ctm. high, vigorous, with many axillary bulbs at the ground and in the inflorescence.

Rather rare and only in the interior.

Kingorsuak on the west side and Kakasuak, Kingak Angmagsivik.

61. Saxifraga rivularis L.

Lge. Consp. Fl. Groenl. p. 61 & 256, Berlin Kärlväxter p. 39, Hartz Fanerog. p. 392.

On humid moss in brooks and on rocks; rather common.

Kap Wandel, Sten Ö, Smalsund, Kingak Angmagsivik, Sierak, Norsit and Aluit at Kap Dan, Anava, Tasiusak in several places, Kong Oscars Havn (Berlin)! Tasiusak (Bay)!

β. *hyperborea* (R. Br.) Engl. Monogr. Saxifr. p. 105.

In humid and cold places, especially at the foot of perennial snow-drifts, rare.

The west side of Kingorsuak.

γ. *purpurascens* Lge.

Rare, in similar places as the main species.

The westside of Kingorsuak on a house ruin.

62. Saxifraga decipiens Ehrh.

Lge. Consp. Fl. Groenl. p. 62 & 257, Berlin Kärlväxter p. 38, Hartz Fanerog. p. 392.

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a. groenlandica (L.) Lge.

Common on herby slopes, in heath, table-land and especially on rocks. 5—10 ctm. high, thickly tufted, with many stems. Flowers numerous, well developped. In bloom from the 10th of June; sets abundant ripe fruit.

Kong Oscars Havn (Berlin)! Tasiusak (Bay)!

β. Sternbergii (Willd.) Engl. Monograph. Saxifr. p. 188.

Here and there in shady cracks of the rocks.

Kingorsuak, Akiliarisek, Kingak Angmagsivik, Tasiusarsik in Angmagsalik Fjord, Tasiusak.

γ. purpurascens. — The leaves of the corol reddish purple.

Kingak Angmagsivik on a house ruin.

63. Saxifraga aizoides L.

Lge. Consp. Fl. Groenl. p. 64 & 257.

On the banks of small brooks and on humid rocks; 100—600 m. above the sea; rare. 4—5 ctm. high; incoherently tufted, reddish brown. Flowers from the 15th of July—the 15th of August. The flowers well developped; sets comparatively rare fruit (ripe fruit not observed, and only few old fructifications).

Kingorsuak, Tunok, Ikerasak, Sarfakajik, Kordlortok at Tasiusak.

64. Saxifraga Aizoon L.

Lge. Consp. Fl. Groenl. p. 65 & 257, Berlin Kärlväxter p. 38, Hartz Fanerog. p. 392.

Here and there on steep rocks. 5—10 ctm. high. Flowers in July, sets (though rarely) ripe fruit.

Kap Wandel, Nigertusok, Kangerdluarsikajik, Kingorsuak, Akiliarisek, Ikerasausak, Tunok, Amagâ, Kordlortok, Sarfakajik, Elvbakker, Kong Oscars Havn (Berlin)! Tasiusak (Bay)!

β. robusta Engl. Monogr. Saxifrag. p. 244.

25 ctm. high, the leaves 1—3 ctm. long, 5 mm. broad, in bloom on the 25th of July, on fertile sunny rocky steps and at the foot of rookeries.

Kakasuak and Falkefjæld near Kingorsuak.

65. Saxifraga oppositifolia L.

Lge. Consp. Fl. Groenl. p. 66 & 257, Berlin Kärlväxter p. 38.

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Widely distributed in all formations as well along the coast as in the interior. Still the specimens rarely attain a considerable greatness (stems of a length of 35 ctm. are rare) and most of them are very small. Tufts of a diameter of 1—6 ctm. are most frequent. It flowers from the 15th of May till the middle of June, but delayed flowers are found. Even minimal tufts of a diameter of 5 mm. or creeping specimens of the length of 1 ctm. bear 1—2 flowers, that are often covered with snow or are exposed to ÷4 —5° C. without interrupting the flowering. Fruit is found already in the first week of June, and the seeds are most often spread before the end of June. The two forms mentioned by G. Andersson and H. Hesselman (Bidrag t. Kännedomen om Spetsbergen o. Beeren Eilands Kärlväxtflora. Bih. t. K. Sv. Vet.-Akad. Handl. Bd. 26. Afd. III. No: I, p. 23), f. *reptans* and f. *pulvinata*, with numerous forms of transition are found almost equally frequently within the district, in the way, that f. reptans is preferably found in steep and sloping places and very humid localities, and f. pulvinata prefers plane field and such localities where the soil during some time of the summer is totally dried up. Both of them belong to the most common plants on areas of sand-drift, especially where the sand-grains are large (— 1 ctm. diameter); and they are often so totally covered, that nothing but the flower rises above the sand, but this does not apparently seem to hurt them.

Fam. 12. Crassulaceae.

66. Sedum Rhodiola D. C.

Lge. Consp. Fl. Groenl. p. 67 & 258, Hartz Fanerog. p. 392, Rhodiola rosea L. Berlin Kärlväxter p. 37.

Rather commonly distributed on herby slopes, on steep rocks, steps and in fertile heath, but nowhere numerous and bearing but a slight part of the vegetation. 20—30 ctm. high; flowers from the 10th of June til August, sets abundant fruit, hermaphroditic flowers were not observed.

Kap Wandel, Nigertusok, Kangerdlugsuatsiak, Sten Ö, Moræne Ö, Grus Ö, Kangerdluarsikajik, Sarfak, Kingorsuak, Amagâ Sermilik, Ikerasausak, Tunok, Anava and Aluit near Kap Dan, common near Tasiusak, Kong Oscars Havn (Berlin)!, Tasiusak (Bay)!

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67. **Sedum annuum** L.

Lge. Consp. Fl. Groenl. p. 67 & 258, Berlin Kärlväxter p. 37.

Rare; on steep rocks above herby slopes, only in the interior, as a rule 5, from 2—8 ctm. high, with many stems. Flowers from the 25th of June—15th of August; sets abundant, full ripe fruit and dies then. The flowering is very abundant, a specimen, 5 ctm. high, had 125 flowers, a large one of a height of 8 ctm. 171 flowers.

Nigertusok, Kangerdluarsikajik, Kingorsuak on several places, Akiliarisek, Sierak, Tunok, Ikatek, Tasiusarsik in Angmagsalik Fjord, Sarfakajik, Kordlortok Sö, Tasiusak, Kong Oscars Havn (Berlin)!

68. **Sedum villosum** L.

Lge. Consp. Fl. Groenl. p. 67.

On steep sun-lit rocks above the herby slopes, snow-covered in winter, rare. The specimens are 3—6 ctm. high. It flowers in the middle of June, sets abundant seed. Wintering branches with dark reddish green, closely rosulate leaves of a diameter of abt. 6 mm. are sometimes found snowless, but alive in winter.

Nigertusok, Kingorsuak, Akiliarisek, Amaga in Sermilik, Sierak, Amaga near Tasiusak, Udkigsfjæld near the colony.

69. **Sedum acre** L. Sp. pl.

Fl. Dan. Tab. 1457. — New for Greenland!

On rocks and algal ground, was especially rankly growing in cracks and fissures, which it filled up totally, and among the algae themselves, immediately above the high-water mark; it forms tufts of a breadth of more than 20 ctm. and a length of more than 1 mt. and a height of more than 3 ctm.

Tunok, Ingmikertok in Angmagsalik Fjord, Amakâ near Tasiusak. — Geographical distribution: Europe, Siberia, Asia Minor, North Africa.

Fam. 13. Umbelliferae.

70. **Archangelica officinalis** Hoffm.

Lge. Consp. Fl. Groenl. p. 68, Hartz Fanerog. p. 392.

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Rather rare and only in the interior on warm, sun-lit slopes with water-courses running throughout the summer or on springs; always snow-covered in winter.

40—100 ctm. high, with 1—many stems, the stems up to 6 ctm. in diameter, erect with 2—4 leaves and 1—3 basal-leaves, 1—5 umbels on every stem. The umbels are up to 10—15 ctm. in diameter, the involucres 0—1, sometimes lobate, the involucels many-leaved, often lobate. It flowers from the 1st of July till October, with fruit from August, the fruit does not ripen every year. The corollas greenish-white or yellowish-green of a peculiar sweetish odour; the honey-formation abundant; proterandrous. The specimen dies after having set fruit, but the stems often remain throughout the winter, dry up, and often with umbels and fruits that have not become fullripe. The seed germs in spring; seedlings are found in great numbers below the dead specimens. The plant is at least 4 years in reaching full development. During the first year they get but 1—2 leaves with 10—15 ctm. long stalks and single tripartite plate with serrated leaflets; the root is 5—10 mm. thick. The second year the number of the leaves is 3—6, the form is the normal one, but they are but 25—35 ctm. long. The root is until 3 ctm. thick. The third year there are 5—8 leaves with until 50 ctm. long and 2 ctm. thick stalks and 40—50 ctm. broad plate, the root is now until 8 ctm. in diameter at a length of 10—20 ctm., reaches but just as far as the earth's crust, but goes 60 ctm. into the ground. The whole plant has a peculiar carrotish taste, leaving a musky umbelliferous taste. It is especially during the flowering time eaten with preference by the natives who often undertake miles long wanderings to get hold of it. One man can carry with him 15—20 kilogram stalks besides immense lots, peeled and eaten on the spot. As a consequence the plant is now limited to localities not easily accessible, high up on the rocks or behind glaciers, rapid rivers or ice-filled inlets, and nowhere else it now attains its most vigorous development, but is going to be extirpated in all localities easily accessible.

Northern limit 66° 19′ lat. N., observed up to 700 mt. above the level of the sea, thrives best at a height of 150—300 mt.

Kilikitak and Kakasuak near Kingorsuak, Akiliarisek, the bottom of the Sierak valley, Ikerasausak, in two places near the bottom on the eastern side, Kuaralik near the Sermilik road from the colony.

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The large island in Kordlortok Sö, the southern side of the Kordlortok Fjæld, Amagâ. Stated, but not collected (Bay)!

Fam. 14. Plantaginaceae.

71. **Plantago maritima** L.

Lge. Consp. Fl. Groenl. p. 68, Berlin Kärlväxter p. 58.

The tufts small, 1—2 (exceptionally 8) ctm. in diameter, flower stalks 1—6 ctm. long, the inflorescense 5 mm. thick and 4—6 mm. long. It flowers in July.

Found but in one place, 65° 33′ lat. N., Grönlænderpynt near Tasiusak on a small stony plain, presumably in the same place where it was collected by Berlin.

Fam. 15. Plumbaginaceae.

72. **Armeria vulgaris** Willd., var. **sibirica** Turcz.

Rosenvinge, Tillæg p. 683. A. sibirica Lge. Consp. Fl. Groenl. p. 70 & 259, Hartz Fanerog. p. 392.

In table-land up to 350 mt. above the level of the sea; rare, 5 ctm. high; abundantly flowering. Flowers in July.

Adloe near Kap Dan, Elvbakker near Tasiusak, Tasiusak (Bay)!

Fam. 16. Lentibulariaceae.

73. **Pinguicula vulgaris** L.

Lge. Consp. Fl. Groenl. p. 71 & 260, Berlin Kärlväxter p. 58.

In humid places in heath and table-land, especially near the edge of steeply sloping rocks; rare; 5—10 ctm. high with 1—3,5 ctm. long leaves. Flowers in July; sets ripe fruit in August. The leaves are frequently set with small insects.

Nigertusok, Kakausak near Kingorsuak, Akiliarisek, Sierak, Ikerasak, Tunok, Kuarmiut, Misutok, Kordlortok, Elvbakker, Kong Oscars Havn (Berlin)!

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Fam. 17. Scrophulariaceae.

74. Veronica alpina L.

Lge. Consp. Fl. Groenl. p. 72 & 261, Berlin Kärlväxter p. 261, Hartz Fanerog. p. 392.

Rather common on herby and grassy slopes and in copses of willows. 5—20 ctm. high; stems glabrous or towards the top somewhat hairy; they grow close together and form often a cover of more than 1 □ mt. or in 4—5 branched isolated tufts with ascending shoots. Flowers from the 20th of June till the 1st of August, sets abundant ripe fruit.

Kap Wandel, Nigertusok, Kangerdlugsuatsiak, Kangerdluarsikajik, Smalsund, Ikatek, Kingorsuak, Akiliarisek, Ikerasausak, Tunok, Tasiusarsik in Angmagsalik Fjord, Sarfakajik, Adloe near Kap Dan, common near Tasiusak, Kong Oscars Havn (Berlin)! Tasiusak (Bay)!

var. *villosa*.

Lge. Consp. Fl. Groenl. p. 93; 5—10 ctm. high, the whole plant very hairy.

Tasiusarsik in Angmagsalik Fjord together with the main species and transition forms.

75. Veronica saxatilis L. fil.

Lge. Consp. Fl. Groenl. p. 73 & 261, Hartz Fanerog. p. 392.

Here and there on herby slopes and on steps of steep rocks above the slopes; 5—10 ctm. high, up to 2 mm. thick, far branching shoots forming small tufts. The leaves always glabrous. The corolla up to 1 ctm. in diameter. Flowers from the 1st of July. Sets abundant ripe fruit. Old fructifications with open capsules remain often 3 years on the plant.

Nigertusok, Ikatek, Kakasuak near Kingorsuak, Akiliarisek, Kuarmiut, Tasiusarsik in Angmagsalik Fjord, Amagâ, Kordlortok Sö, Elvbakker, Tasiusak (Bay)!

76. Pedicularis flammea L.

Lge. Consp. Fl. Groenl. p. 75 & 262, Berlin Kärlväxter p. 58.

Rather rare in fertile heath. 5—15 ctm. high, often with many stems; flowers from the 20th of June till the 15th of July, sets abundant ripe fruit, old fructifications are common.

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Kap Wandel, Kingorsuak, Sierak, Tunok, Ikerasausak, Kordlortok, Elvbakker, Kong Oscars Havn (Berlin)!

77. **Pedicularis hirsuta** L.

Lge. Consp. Fl. Groenl. p. 76 & 262, Berlin Kärlväxter p. 57.

Common in heath and table-land, is often found in places where there is much humidity in spring, but is always dry in summer; 10—25 ctm. high, with up to 7 flowering stems, flowers from the 1st of July, sets abundant ripe fruit, old fructifications are common and remain on the plant until 3 years after the ripening.

78. **Pedicularis lanata** Cham.

Lge. Consp. Fl. Groenl. p. 76 & 262.

Very rare; on sandy slopes. 5—15 ctm. high, flowers in July, sets ripe fruit.

Kingorsuak, Elvbakker at Tasiusak.

79. **Bartsia alpina** L.

Lge. Consp. Fl. Groenl. p. 78 & 263, Berlin Kärlväxter p. 58, Hartz Fanerog. p. 392.

Commonly distributed on herby slopes and in fertile heath. 10—20 ctm. high, as a rule with many stems, often with 2—3 years old fruit-stalks, flowers July-August, sets abundant ripe seed.

Kap Wandel, Kangerdlugsuatsiak, Ödesund, Kangerdluarsikajik, Kingorsuak, Akiliarisek, Amagak in Sermilik, Kuarmiut, Ikerasausak, Sierak, Tunok, Misutok, Kordlortok, Sarfakajik, Elvbakker, Kong Oscars Havn (Berlin)! Tasiusak (Bay)!

var. *Jensenii* Lge. Consp. Fl. Groenl. p. 263.

In fertile humid heath on the bank of a dried up brook. A 12 ctm. high specimen with 6 erect shoots, issuing at a bow from a rhizome abt. 0,8 ctm. thick and 1 ctm. long with numerous thick adventitious roots. The leaves light green; the corolla pale blue; was found in bloom on the 24th of July. It bore besides the fresh year's shoots 4 old and dry from previous years of which one with rests of a capsule.

The bottom of Kingorsuak 66° 10′ lat. N.

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80. **Euphrasia latifolia** Pursh.

Fl. Am. sept. II. p. 430. E. officinalis L. Lge. Consp. Fl. Groenl. p. 79 & 264, Berlin Kärlväxter p. 56.

Rather rare, on herby and grassy slopes and on rocky steps above the slopes. 1—15 ctm., as a rule unbranched stems (rarely with two branches from the ground). Flowers richly in the latter half of July, sets abundant ripe fruit. Thrives best in the interior.

Nigertusok, Kakasuak near Kingorsuak, Akiliarisek, the bottom of the Sierak Dal, Tasiusarsik in Angmagsalik Fjord, Sarfakajik, Tasiusarsik, Kordlortok Sö, Elvbakker, Kong Oscars Havn (Berlin)!

Fam. 18. Boraginaceae.

81. **Mertensia maritima** (L.) Don.

Stenhammaria maritima (L.) Rchb.; Lge. Consp. Fl. Groenl. p. 80 & 264.

On a stony plain near the beach; found only in one place in bloom on the 9th of July, faded on the 26th of August. But 3 specimens altogether were found.

Grönlænderpynt near the trading station Tasiusak 65° 37′ lat. N.

Fam. 19. Labiatae.

82. **Thymus Serpyllum** L. var. **prostrata** Horn.

Lge. Consp. Fl. Groenl. p. 81 & 264, Berlin Kärlväxter p. 57, Hartz Fanerog. p. 392.

Commonly distributed in the interior on herby slopes and on rocky steps above these, also in the best parts of the table-land, rare on the coast and only on herby slopes. Always decumbent or at best as espalier against blocks of stone with up to 40 ctm. long and 3 mm. thick branches. Flowers in July, sets ripe fruit.

Northern limit Kap Wandel 66° 20′ lat. N.

Fam. 20. Gentianaceae.

83. **Gentiana nivalis** L.

Lge. Consp. Fl. Groenl. p. 82 & 264, Berlin Kärlväxter p. 55.

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On rocky steps above the herby slopes; rare.

2—10 ctm. high with up to 10 flowering branches, flowers in July, sets abundant ripe fruit.

Kap Wandel, Nigertusok, Kakasuak near Kingorsuak, Akiliarisek, Misutok, Sierak, the bottom of the Sierak Dal, Ikerasak, Tunok, Tasiusarsik in Angmagsalik Fjord, Kordlortok Fjæld, Kong Oscars Havn (Berlin)!

84. **Gentiana tenella** Rottb.

Lge. Consp. Fl. Groenl. p. 265.

On rocky steps above herby slopes, very rare. 1—10 ctm. high, divided from the ground in one erect main stem and 3—4 ascending branches, ending each with one flower. Flowers in the end of July; the corolla pale bluish purple, sets fruit, but the ripening was not observed.

Found but on the humid steppy side, exposed to the south, of the mountain Kakasuak c. 700 mt. above the level of the sea, where numerous specimens were found. Kingorsuak.

***Malva neglecta** Wallr.

On refuse-heaps near the colony, sterile, introduced.

Fam. 21. Diapensiaceae.

85. **Diapensia lapponica** L.

Lge. Consp. Fl. Groenl. p. 83 & 265, Berlin Kärlväxter p. 55, Hartz Fanerog. p. 392.

Common every where. Kong Oscars Havn (Berlin)! Tasiusak (Bay)!

Commonly distributed in table-land, heath, on rocky steps and on herby slopes. Forms tufts of as much as 35 ctm.s' diameter and 7 ctm.s' height above the ground; the tufts are often dead at the top or in spots. Seedlings and small specimens of 3—10 mm.s' diameter are common in table-land. Flowers from the 15th of June till the 15th of August, sets abundant ripe fruit. The peduncles are 0,5—4 ctm. long.

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Fam. 22. Pyrolaceae.

86. **Pyrola rotundifolia** L. var. **grandiflora** D. C.

P. grandiflora Rad. Lge. Consp. Fl. Groenl. p. 84 & 266.

Found but in one place on green-sward among blocks flung down, but here in great numbers. 10 (exceptionally 15) ctm. high, with 4—6 flowers in clusters, the corollas white with a faint pink shade, 1—1,5 ctm. in diameter; they have a faint agreeable odour. In bloom on the 1st of August.

The west side of Kingorsuak, 66° 8′ lat. N.

87. **Pyrola minor** L.

Lge. Consp. Fl. Groenl. p. 84 & 266, Berlin Kärlväxter p. 54, Hartz Fanerog. p. 392.

Here and there, never common or in greater numbers, in copses of willows, and on herby slopes in well sheltered localities in the interior. 10—15 ctm. high with leaves of a length of 2—3 ctm. Flowers up to 10 in the cluster; where it appears on the coast it has always been found to be sterile.

Kap Wandel, Nigertusok, Kangerdluarsikajik, Cassiope Fjæld, Kakortok and the west side of Kingorsuak, Ikerasausak, Tunok, Tasiusarsik in Angmagsalik Fjord, the bottom of the Kuarmiut, Sierak Dal, Kordlortok Sö, Elvbakker, Kong Oscars Havn (Berlin)! Tasiusak (Bay)!

Fam. 23. Ericaceae.

88. **Phyllodoce coerulea** (L.) Gren & Godr.

Lge. Consp. Fl. Groenl. p. 86 & 266, Berlin Kärlväxter p. 53.

Rather common on herby slopes and in the most fertile parts of the heath, especially in shelter of rocks on the sunny side. Up to 30 ctm. high. Flowers sparingly from the 20th of June till the 1st of August; sets (rather sparingly) ripe fruit.

Kap Wandel, Kangerdlugsuatsiak, Smalsund, Kingorsuak, Akiliarisek, Ikerasausak, Kingak Angmagsivik, Tunok, Sierak, Sarfakajik, Kordlortok Sö, Amagà, Elvbakker, Udkigsfjæld, Sömandsfjæld, Kong Oscars Havn (Berlin)!

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89. **Cassiope tetragona** (L.) Don.

Lge. Consp. Fl. Groenl. p. 87 & 266.

Found but in a single place in heath on the shady side of a mountain range between 150 and 800 mt. above the level of the sea from 66° 5′—66° 9′ lat. N. and only rank in the middle of the stated area. Here the tufts attained a diameter of 30—70 ctm. and a height above the ground of 15—25 ctm., its development was also most vigorous almost in the middle of its vertical distribution between 500 and 700 mt. above the level of the sea; here almost every specimen was flowering ($^{24}/_{6}$—$^{27}/_{7}$) and numerous ripe and old fruits were seen; lots of young specimens were also found (but seedlings were not seen). Many of the less vigorous specimens were much injured from Exobasidium. On the extreme points of the habitat downwards and in horizontal direction but a single sterile and stunted specimen was found after a long time spent in searching, while the limit upwards (800 mt.) was due to orographic influences, the rock being here covered with debris offering no habitat and the boundary-specimens being vigorous and commanding cover-forming.

Kingorsuak from Cassiope Fjæld as far as below the first glacier on the west side.

90. **Cassiope hypnoides** (L.) Don.

Lge. Consp. Fl. Groenl. p. 87 & 267, Hartz Fanerog. p. 392. Andromeda hypnoides Berlin Kärlväxter p. 53.

Rather common on herby slopes, on rocky steps, in humid places in table-land and among blocks of stone, often in shade. The tufts up to 25 ctm. in diameter, thick, up to 5 ctm. high. Flowers richly from the 20th of June, sets abundant ripe fruit.

Kap Wandel, Nigertusok, Kangerdlugsuatsiak, Ikatek, Kingorsuak, Akiliarisek, Ikerasausak, Tunok, Elvbakker, Kordlortok, Sarfakajik Amagâ, Kong Oscars Havn (Berlin)! Tasiusak (Bay)!

91. **Loiseleuria procumbens** (L.) Desv.

Lge. Consp. Fl. Groenl. p. 88 & 267, Azalca procumbens L. Berlin Kärlväxter p. 53.

Commonly distributed in table-land, on rocky steps and herby

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slopes and in heath. Flowers from the 10th of June till the 15th of July, sets abundant ripe fruit, old fructifications are often found. The tufts become up to 70 ctm. in diameter and 2—3 ctm. high with the branches buried in the earth, the head of the root is often thickened. Old tufts are always dead in the middle.

92. **Rhododendron lapponicum** (L.) Wbg.

Lge. Consp. Fl. Groenl. p. 88 & 267, Berlin Kärlväxter p. 53.

Rare and only in the interior, in heath and on rocky steps, especially where water is oozing down in summer. The stem often tuberously thickened in the earth's crust up to 1,3 ctm. in diameter; the branches up to 30 ctm. long and 0,5 ctm. thick, decumbent or ascending, but not more than 8 ctm. above the ground. Flowers from the 20th of June till the 15th of July, sets abundant ripe fruit.

Nigertusok, Eskimo Ö, Kingorsuak, Sierak, Elvbakker.

β. viride Berlin Kärlväxter p. 53.

Smaller than the main species. The leaves greenish on their under sides.

Tasiusarsik in Angmagsalik Fjord one single sterile specimen, abt. 10 ctm. high, Kong Oscars Havn (Berlin)!

Fam. 24. Vaccinіaceae.

93. **Vaccinium uliginosum** L.

Lge. Consp. Fl. Groenl. p. 90 & 268, Berlin Kärlväxter p. 52, Hartz Fanerog. p 392.

Commonly distributed in the interior on herby slopes and in humid fertile heath, also as espalier in table-land. Up to 50 ctm. long stems and branches, arising up to 25 ctm. above the ground. The leafing takes place in the latter half of May. Flowers in June, the flowers fragrant, sets abundant ripe fruit.

* *microphyllum* Lge. l. c.

Appears together with the main species and transition forms, but is more hardy and is therefore also found on the coast and in dry places in the table-land exposed to the wind; requires much humidity in spring. Flowers rather sparingly, sets ripe fruit.

Common everywhere.

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Fam. 25. Rubiaceae.

94. Galium palustre L. var. minus Lge.

Lge. Consp. Fl. Groenl. p. 92 & 269.

Found but in one place in the edge of a pond among moss and grass, but here very numerous. 3—10 ctm. long, richly branched creeping shoots with 4-leaved whorls. The joints of the stems 0,7—1 ctm. long. The leaves 1—5 mm. long, c. 1,5 mm. broad. The flowers 1—4 in cyme, abt. 1 mm. broad, the corol white, tripetalous, the fruit 0,5—0,8 mm. in diameter. Flowers from the 10th of July till the 10th of August, in fruit on the 20th of August.

The Subularia Dam in Elvbakker at Tasiusak.

Fam. 26. Campanulaceae.

95. Campanula uniflora L.

Lge. Consp. Fl. Groenl. p. 92 & 269.

Very rare, high up in the mountains on the shady side in the interior, up to 15 ctm. high. In bloom from the 13th of July till the 1st of August.

The west side of Kingorsuak, Amagâ in Sermilik.

96. Campanula rotundifolia L.

Lge. Consp. Fl. Groenl. p. 93 & 270, Berlin Kärlväxter p. 50, Hartz Fanerog. p. 393. C. groenlandica Berlin l. c.

This very variable species appears in two forms.

α. arctica Lge. l. c. C. rot. v. linifolia Wbg., C. rot. v. Langsdorffiana D. C., C. Scheuczeri Vill., C. helcrodoxa (West) Witasek.

Commonly distributed on herby slopes, in copses of willows and heath, 10—30 ctm. high, 1—6 flowers. In older specimens numerous bowed off-shoots[1]) issue from a vigorous perpendicular top-root. By and by they arise and flower. While still sterile they bear oval-lanceolate leaves and cordate or oval basal-leaves; the leaves of the flowering stem become towards the top more and

[1]) See Warming: Botanisk Tidsskr. Copenhagen 1877, p. 84.

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more linear, and sometimes all leaves except the 2—3 lowest are narrow linear. The lobes of the calyx are 4—9 mm. long ($^1/_2$—$^1/_3$, exceptionally $^1/_4$—$^1/_5$ of the length of the corolla). The corolla 13—20 mm. long, and when dried 15—20 mm. wide at the top. Flowers in July—August—September, sets ripe fruit. A few specimens are approaching the main species very much.

β. uniflora Lge. l. c. C. groenlandica Berlin l. c.

Commonly distributed in all formations; 5—10 ctm. high stem ascending from a perpendicular master-root, less often with than without the above mentioned lateral shoots. The stems have 1 flower, or 1 fully developped and 1—2 checked flowers. Basal leaves as in the preceding plant. The stem leaves most often somewhat broader, narrow lanceolate-oval or lanceolate-lingulate, the upper ones always narrowest, often linear. The calyx quinque-(6—9-) dentate, the denticles narrow, $^1/_3$ (exceptionally $^1/_4$—$^1/_5$) of the length of the corolla. The corolla often large and open and more broad than long when dried. The flowers erect. Flowers July—October, sets abundant ripe fruit.

I have referred *C. groenlandica*, described by Berlin, to this form because I do not consider it differring as to species from it. Taken each by itself the original specimens of Berlin in the Riksmuseum in Stockholm are very characteristic, but examined together with a greater number of specimens, collected by me for this purpose, all transitions will be found to appear, and not all original specimens are exactly congruent with the description. Those of them which I have seen are not dentate (this character has occasioned Lange's referring a specimen collected by Mr. Knutsen at Kingorsuak (Kangarsuk) to *C. groenlandica*) neither are the sepals always so short as stated; in one specimen they are even almost as long as $^1/_3$ of the length of the corolla, and this is in another of the specimens not more broad than long. It will on the whole be impossible to base a separation of species on the above named characters. This will appear from the following list of measurings.

In the list all the numbers are given in millimeter, and the form of the leaves is given by the greatest measured breadth divided by the greatest length of the same leaf. I have endeavoured to measure the broadest leaves among the lower stem leaves. C:C. indicates the length of the lobes of the calyx in proportion to those of the corolla, both of them measured from the deepest

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Form of the basal-leaves	The leaves of the stem				The flowers				Full height of the plant	Finding place and time
	Lower		Upper		Number	Number of the lobes of the petal	Measure			
	Form	Incision	Form	Incision			C : C	Corolla L : Br		
0	linear	0	linear	0	1	8	5:25	25:35	130	Elvbakker Taslusak $^{20}/_{8}$ 02.
						8	4,5:23	23:34	131	
0	linear	0	linear	0	—	5	4:18	18:18	200	Taslusak $^{22}/_{8}$ 98.
0	3:29 stalk 14	0	2:30	0	4	5	4:20	20:20	160	Sarfakajik $^{26}/_{8}$ 02.
0	2:16 stalk 4,5	0	1:15	0	1	5	3:13	13:10	60	Kuarmiut $^{16}/_{7}$ 02.
0	3,5:21 st. 11	0	linear	0	4	5	3,5:18	18:22,5	220	Amakâ $^{14}/_{8}$ 02.
cordate	3,5:20	0	1:25	0	3	8	5:20	20:28	150	Amagâ $^{15}/_{8}$ 02.
0	3,5:13 / 2,5:15 st. 7	a few fine denticles	1,5:25	0	*	—	5:16	16:19	100	Ikatek $^{13}/_{9}$ 99.
0	2:10	0	0,3:10	0	—	5	5:15	15:19	60	Kakasuak $^{30}/_{7}$ 02.
0	4:12 stalk 10	1 denticle	1,5:22,5	0	1	5	7:12	12:16	75	Kap Wandel $^{1}/_{8}$ 99.
cordate 16:12	4:14	0	thread-formed	0	1	5	5:14	14:19	70	Amakâ $^{14}/_{8}$ 02.
					1	6	5:19	19:29	140	
0	5:26	repand	1:10	dentate	—	5	8:17	17:21	150	Amagâ $^{21}/_{8}$ 02.
round 7:9	3:12 stalk 12	0	linear	0	—	5	6:17	17:17	180	Sierak $^{20}/_{7}$ 02.
rhomboid	3:12 stalk 6	0	2:27	0	1	5	9:20	20:26	100	Sierak $^{19}/_{7}$ 02.
0	7:23	0	1:16	0	—	5	6:17	17:18	170	Taslusak $^{22}/_{8}$ 99.
cordate 16:12	7:22	dentate	3:28	0	1	5	bud		200	Elvbakker $^{22}/_{8}$ 99.
cordate 12:15	7:18 / 4:10	dentate	—	0	—	—	sterile		†	Amakâ $^{11}/_{8}$ 02.
			2:30	0	2	5	bud			

*) 11 Stems with one flower. †) Shade-lowing form.

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incision of the brim of the calyx to its point. L. Br. is the length of the corolla divided by its breadth when dried and compressed; only totally stretched corollas have been measured.

It is seen that the breadth of the corolla is varying independently of the length of the denticles of the calyx and the form and indentations of the leaves. Especially the form of the leaves is very dependent on the habitat. Shade produces broad dentate leaves, a free habitat narrow entire leaves, but not even these two characters are varying in a parallel way. This has besides, been stated abready by Goebel in 1895[1]) and later on by Familier[2]). It seems as if these shade loving forms are flowering late in the year and sometimes have broad corollas.

Fam. 27. Compositae.

97. **Taraxacum croceum** Dahlstedt.

G. Andersson och H. Hesselman: Bidr. t. kännedomen om Spetsbergens och Beeren Eilands Kärlväxtflora. Bih. t. K. Sv. Vet.-Akad. Handl. Bd. 26. Afd. III. No. 1, p. 12. Taraxacum officinale Web. Lge. Consp. Fl. Groenl. p. 94 & 270, Berlin Kärlväxter p. 44, Hartz Fanerog. p. 392.

The leaves, 5—12, are lingulate, 5—33 (as a rule 10) ctm. long, at the top 1—1,5 ctm. broad, more or less deeply lobate dentate or slightly and remote sinuate dentate. The denticles wry. The point of the leaf round or pointed. The leaves green, glabrous with purple midnerve.

1—4 peduncles, 10—60 (as a rule 20) ctm. long, the heads 2—2,5 ctm. in diameter. The flowers yellow, the marginal flowers 1,75—2 mm. broad with a broad reddish purple or bluish purple stripe on their outer sides, running out into three middenticles. Style and stigma saffron coloured. Outer phyllaries protruding, 5—6 mm. long and 1,5—2 mm. broad with white or reddish purple edges and rough brownish purple point. Inner phyllaries linear, 1 ctm. long, 1 mm. broad, at the point contracted to a brownish

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[1]) Ueber die Abhängigkeit der Blattform v. Camp. rot. v. Lichtintensität. Sitzungsb. d. bayr. Akad. d. Wissensch. 1895 p. 331.

[2]) Flora Bd. 87, 1900 p. 95.

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purple, often slightly dentated appendage. The fruit 2,5 mm. long, oboval lanceolate, pale terracotta coloured or dirty straw coloured with small upright denticles. The beak up to 9 mm. long.

Both forms mentioned by *D.* are often found side by side, and it is impossible then to keep them from each other.

They flower from the 20th of June till the 1st of September, set abundant ripe fruit in August.

On herby and grassy slopes, on steps, in copses of willows and less often in table-land and heath. Rather common in the whole district both on the coast and in the interior, noted in all places. Kong Oscars Havn (Berlin)! Tasiusak (Bay)!

98. **Hieracium alpinum** L. [1])

Lge. Consp. Fl. Groenl. p. 95 & 271, Berlin Kärlväxter p. 44, Hartz Fanerog. p. 392.

Rather common on herby and grassy slopes, on steps and in heath. The leaves numerous, 2—8 ctm. long. The peduncle 15—20 ctm. high, hairy, the heads 2—3,5 ctm. in diameter. Flowers from the 10th of July till September, sets abundant ripe fruit.

Common everywhere in the district both on the coast and in the interior. Kong Oscars Havn (Berlin)! Tasiusarsik (Knutsen)! Tasiusak (Bay)!

99. **Hieracium nigrescens** Willd. ***hyparcticum** Almquist.

Berlin Kärlväxter p. 46. H. atratum Fr. Lge. Consp. Fl. Groenl. p. 271.

Here and there on herby slopes and in copses of willows in the interior. 30—50 ctm. high, the basal-leaves 10—20 ctm. long. The number of the heads 2—8. Flowers from the 20th of July till the 30th of September, sets abundant ripe fruit.

Kangerdluarsikajik, Kakasusak and Kilikitak near Kingorsuak, Ikerasausak, Kuarmiut, the bottom of the Sierak Dal, Tasiusarsik in Angmagsalik Fjord, Kordlortok Sö, Kuaralik at Sermilik-Vejen, Amakâ at Kordlortok Fjæld, Amagâ, Elvbakker, Kong Oscars Havn (Berlin)!

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[1]) The Hieracium species were kindly determined by Amanuensis Dahlstedt in Stockholm.

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100. **Hieracium dovrense** Fr. ***groenlandicum** Almq.

Lge. Consp. Fl. Groenl. p. 272.

Very rare and only in the interior in especially well sheltered, warm localities with large and constant snow cover in winter, on herby slopes and in copses of willows. 30—40 ctm. high, with 2—3,10 ctm. long stem leaves.

Kakasuak near Kingorsuak, Akiliarisek, 66° 19′—66° 8′ lat. N.

101. **Gnaphalium supinum** L.

Lge. Consp. Fl. Groenl. p. 99 & 275, Berlin Kärlväxter p. 42, Hartz Fanerog. p. 392.

Here and there on rocky steps and on herby slopes, 4—6 ctm. high, flowers from the 15th of July till the 1st of October, with ripe fruit in August.

Kakasuak, the west side of Kingorsuak, Ikatek, Smalsund. Tasiusarsik kangigdlek, Elvbakker, Kong Oscars Havn (Berlin)! Tasiusak (Bay)!

β. subacaule Wbg.

Tasiusarsik in Angmagsalik Fjord, Kordlortok, Kong Oscars Havn (Berlin)!

γ. fuscum Sommerf.

More common than the chief species, on similar localities. 5—8 ctm. high.

Kakasuak, the east side of Kingorsuak, Kingak Angmagsivik, Ingmikertok, Kordlortok, Sarfakajik, Elvbakker, Kong Oscars Havn (Berlin)!

102. **Gnaphalium norvegicum** Gunn.

Lge. Consp. Fl. Groenl. p. 99 & 275, Berlin Kärlväxter p. 42.

Not common; on herby slopes and rocky steps in the interior. 10—40 ctm. high, the leaves 5—17 ctm. long, 1—2,7 ctm. broad. Flowers from the 20th of July—the 1st of September, sets abundant fruit, old fruit-stalks common.

Kakasuak, the east side of Kingorsuak, Akiliarisek, Ikatek, Ikerasausak, the bottom of the Sierak Dal, Sierak, Tunok, Tasiusarsik in Angmagsalik Fjord, Sarfakajik, at Sermilik-Vejen near the colony, Kordlortok Fjæld, Amaga, Elvbakker, Kong Oscars Havn (Berlin)!

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103. **Antennaria dioica** (L.) Gärtn. var. **hyperborea** Don.

Lge. Consp. Fl. Groenl. p. 100 & 275.

Very rare, on rocky steps. 7—15 ctm. high, with 1—5 stems, flowers richly in the latter half of July, with fruit on the 18th of August.

Akiliarisek, Kordlortok Sö, 66° 19′—65° 40′ lat. N.

104. **Antennaria alpina** (L.) Gärtn.

Lge. Consp. Fl. Groenl. p. 100 & 275, Berlin Kärlväxter p. 42. Hartz Fanerog. p. 392.

Rather common on herby slopes and rocky steps in all parts of the district. 5—12 ctm. high. Flowers from the 15th of June till the 15th of August, sets abundant ripe fruit.

Kakasuak, the east and west side of Kingorsuak, Falkefjæld, Akiliarisek, Sten Ö, Fugleholm, Tunok, Tasiusarsik in Angmagsalik Fjord, Kordlortok, Adloe, Sarfakajik, Amagâ, Amakâ, Elvbakker, Kong Oscars Havn (Berlin)! Tasiusak (Bay)!

var. *glabrata*. — Cassiope Fjæld near Kingorsuak.

105. **Erigeron alpinus** L. Fl. Dan. Tab. 292.

Lge. Consp. Fl. Groenl. p. 101 & 276, Berlin Kärlväxter p. 43. Rosenvinge Tillæg p. 699.

Rather common on herby and grassy slopes and rocky steps in the interior. 10—20 cmt. high, often with many stems, the basal leaves lanceolate spatulate, hairy on their under sides, more or less hairy or almost glabrous on their upper surfaces, ciliate, with a distinct midnerve, and 2—4 more or less distinct secondary nerves, sometimes a little fleshy with indistinct nerves. The stem leaves numerous, lanceolate-linear, hairy, ciliate. The heads single or 2—3 together. The phyllaries almost equally long, upright, compressed, closely hairy with white unjointed or slightly jointed woolly hairs. The marginal flowers pink or light purple, the outer tubular discous flowers ♀.

Nigertusok, Kangerdlugsuatsiak, Kangerdluarsikajik, Kingorsuak, Akiliarisek, Tasiusarsik in Angmagsalik Fjord, Kordlortok, Sarfakajik, Elvbakker, Kong Oscars Havn (Berlin)!

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Northern limit 66° 20′ lat. N.

None of the specimens I saw can with certainty be referred to *Erigeron neglectus* Kerner, no more than the specimens the named author has distributed under this name (Fl. exic. austr. hung. N. 254) are totally congruent with the accompanying description, as to the hairiness of the leaves, the character of the involucre etc. Even Rosenvinge l. c. p. 700 has proved this; and Linné having according to Lange l. c. p. 276 sanctioned the Fl. dan. figure as the plant named by him, I see no reason whatever of changing its name because it does not appear in the Alps, and above all I see no reason of changing it for *E. neglectus*, to judge from the original descriptions, not found in Greenland, if on the whole anywhere.

106. **Erigeron uniflorus** L.

Lge. Consp. Fl. Groenl. p. 101 & 276, Hartz Fanerog. p. 392.

Here and there in heath, table-land and on rocky steps in the interior. 15—20 ctm. high, with many stems, the leaves spatulate, glabrous or hairy, ciliate, stem and stemleaves long hairy, the phyllaries hairy with jointed woolly hairs, no tubular ♀ flowers. The marginal flowers purple or white.

Kingorsuak, Akiliarisek, Tunok, Tasiusarsik in Angmagsalik Fjord, Kordlortok.

β. pulchellus Fr. Lge. l. c.

Common in table-land, heath and on rocky steps, 4—8 ctm. high; with 1—3 stems, the whole plant hairy, the hairs of the involucre purple, jointed, the marginal flowers short, white or yellowish white.

Tasiusak (Bay)!

I see no reason of uniting *E. uniflorus* with *E. alpinus* as proposed by Berlin; certainly the two species may on account of homogeneous conditions of life be of a striking resemblance as to habits and vegetative characters, but any gradual diminution of the number of the tubular female flowers and with this a steady transition to *E. uniflorus* I did not observe.

107. **Arnica alpina** Olin.

Lge. Consp. Fl. Groenl. p. 103.

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Found only in one place, on a low gravel bank formed by disintegration.

12—22 ctm. high with 2—3 couples of leaves, the upper and lower (if there are 3 couples) lanceolate, trinervate, having thin hair on their upper surfaces, the middle ones (second couple) oval, long pointed, glabrous on their discs, all leaves ciliate. The stem especially towards the top lanate. The head 1—1,5 ctm. in diameter, the involucre lanate, the ray-flowers 2 ctm. long, light yellow, the disc-flowers 1 ctm. long, somewhat darker yellow. The fruit drab coloured (brun clair). The fruit edged, ribbed, hairy with upright protruding white hairs. The pappus white. Flowered on the 27th of July; old withered heads from the previous year were seen.

The west side of Kingorsuak, north of the first glacier 66° 7′ lat. N.

Fam. 28. Polygonaceae.

108. **Koenigia islandica** L.

Lge. Consp. Fl. Groenl. p. 104 & 277, Berlin Kärlväxter p. 60.

Here and there, not common; on humid sand, in dried up brooks, on moss in pools and old house places. Appears in two forms according to the habitat. In manured places it becomes 5 ctm. high with 2—3 alternate leaves and branches and 1 couple of opposite basal leaves. The rosette at the top has 3—4 leaves. The leaves are 7—10 mm. long and 2—4 mm. broad, oval lanceolate-spatulate. In poor, sandy localities the height is 0,5—1,5 ctm., the plant unbranched or with one branch, the stem-leaves are wanting, basal leaves and rosette leaves oval, 2—4 mm. long and c. 2 mm. broad.

Both forms flower richly in July—August and set ripe seed. They grow most often gregariously, forming cover together with Hypna over spots of $^1/_2$ □ mt., in sunny localities deep red, in shade sappy light green.

The west side of Kingorsuak, Ikerasausak, Kingak Angmagsivik, Tunok, Ingmikertok, Elvbakker Tasiusak, Kong Oscars Havn (Berlin)! Ikatek in Sermilik (Knutsen)!

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109. **Polygonum viviparum** L.

Lge. Consp. Fl. Groenl. p. 105, Berlin Kärlväxter p. 60, Hartz Fanerog. p. 392.

Commonly distributed in all formations as well on the coast as in the interior. Appears in two forms connected by transitions:

α. vulgaris. On herby slopes and in copses in sheltered localities. The rhizome as a rule not swoln, 5—7 ctm. long, s-formed curved at the top, closely covered with brown ligules and short rests of leaf stalks. Most often 2 stems, 20—30 ctm. long. The inflorescence 5—9 ctm. long, with bulbs on the lower $^2/_3$. Flowers in July. The flowers white-pink. The bulbs are eagerly searched by *Emberiza nivalis.*

β. alpina. Wbg. fl. Lappon. In table-land and heath. The rhizome short, 2—3 ctm., strongly s-formed, bent double, swoln, up to 1 ctm. thick, only at the point set with 2 ctm. long leafstalks. The stem 5—10, exceptionally 20 ctm. high; the ground leaves 1—5 ctm. long, 0,5—3 ctm. broad oval. The inflorescence 2—6 ctm. long with bulbs on the lower half part. The flowers pink, the flowering begins on the 20th of June and is continued in shady localities until the beginning of the frost.

Note. The tubers are eaten by the natives.

110. **Oxyria digyna** Campd.

Lge. Consp. Fl. Groenl. p. 105, Berlin Kärlväxter p. 59, Hartz Fanerog. p. 392.

Commonly distributed in table-land, herby slopes, copses of willows, manured places and cracks in the rocks as well on the coast as in the interior; found at all heights above the level of the sea.

5—50, commonly 20 ctm. high; thickly tufted with numerous rests of old leaf-stalks round the top of the many headed rhizome. The leaf-stalks 1—20 ctm. long, the blade 1—5 ctm. broad. Flowers from the 20th of June until September, sets abundant ripe fruit. Seedling plants and young specimens are most frequently found. The great variations of the size of the plant are due to the wide extent of the habitat of the plant, the smallest specimens are found in stony plains and in table-land. The great specimens are restricted to the copses.

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111. **Rumex acetosella** L.

Lge. Consp. Fl. Groenl. p. 106.

Rare and only in the interior at 300—700 m. height above the level of the sea on rocky steps.

10—15 ctm. high as a rule, with many stems, leaves with one or two more or less distinct denticles at the ground.

The east side of Kingorsuak, Akiliarisek, 66° 19′—66° 10′ lat. N.

var. *integrifolius* Wallroth.

5—10 ctm. high, many stemmed tufts, all leaves with round or pointed basis. Rare, on rocky steps.

Kilikitak, Kakasuak, Kingorsuak, Akiliarisek, Tunok.

Both of them flower in July and set ripe fruit in August.

Fam. 29. Salicaceae.

112. **Salix herbacea** L.

Lge. Consp. Fl. Groenl. p. 107 & 278, Berlin Kärlväxter p. 61, Hartz Fanerog. p. 392.

Commonly distributed in all formations as well on the coast as in the interior, often gregariously and forming cover of a height of 5 ctm. Lonely growing specimens attain sometimes a thickness of the stem of 0,8 ctm. and a length of 40 ctm. In table-land the stem is not rarely tuberously thickened at the surface of the earth to a diameter of 1,5 ctm. The leaves are 0,5—3 ctm. broad, come out after the 1st of June. Flowers richly from the 6th of June, sets abundant ripe fruit, that is spread in August.

113. **Salix arctica** Pall. β. **groenlandica** Lundstr.

Salix groenlandica And. Lge. Consp. Fl. Groenl. p. 108 & 279.

Commonly distributed in humid places as pools, oozy and sandy flats, on brooks, more rarely in copses; branches are as a rule decumbent, rooting, 20—30 ctm. long. Flowers from the 1st of July, sets abundant ripe fruit.

114. **Salix glauca** L.

Lge. Consp. Fl. Groenl. p. 110 & 279, Berlin Kärlväxter p. 61, Hartz Fanerog. p. 392.

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Commonly distributed in all formations as well on the coast as in the interior. 5—250 ctm. long, up to 5 ctm. thick stems, as a rule adpressed, but in copses they may arise to 105 ctm. above the earth. The shoots distinctly separated in long-shoots, upright, stretched and straight with most often large oval leaves, and crooked knotty lateral short-shoots with oval lanceolate leaves. The hairiness of the leaves is much varying from thickly lanate or silkhairy to almost glabrous; the former are the most common on the short shoots, in heath and table-land, the latter in copses and on herby slopes (var. *subarctica* Lundstr.); but are not rarely found together in the same specimen; especially where a stem with hairy narrow leaves is broken, broad, obtuse glabrous leaves are seen on the rank long-shoots, shooting ont from the stub. The hairiness varies also much according to the season. The styles, the hairiness of the ovary and the form of the nectary are varying very much, but not in a parallel way (as stated by Lundstrøm: Die Weiden Novaja Zemljas) so that no certain systematic separations can be built on these circumstances. The limit between *S. glauca*, var. *subarctica* and *S. groenlandica* is as stated by Lundström and Rosenvinge incertain and these two species ought certainly to be united to one single; I have not done it here because of biological differences between them as to habits and habitat making one hardly never doubt in nature which of the two plants one is before.

Fam. 30. Betulaceae.

115. Betula nana L.

Lge. Consp. Fl. Groenl. p. 112 & 280, Berlin Kärlväxter p. 64, Hartz Fanerog. p. 392.

Not common and only in the interior, in heath and table-land, most as espalier, but appearing often gregariously in the habitat, so that it is a considerable constituent part of the vegetation. Up to 20 ctm. raised above the earth, the stem up to 2 m. long, but as a rule but 40—60 ctm. Flowers from the 20th of June till the 15th of July, sets ripe fruit.

Kangerdlugsuatsiak, Kingorsuak, common, Akiliarisek, Amagâ in Sermilik, Ikerasausak, Tunok, Sierak, Kordlortok Sö, Amakâ (numerous), Sarfakajik, Amagâ, Udkigsfjæld, Elvbakker, Kong Oscars Havn (Berlin)!, Tasiusak (Bay)!, Tasiusarsik and Orsuluiak (Knutsen)!.

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Fam. 31. Typhaceae.

116. **Sparganium minimum** Fries.

Rosenvinge Tillæg, p. 709. Anm. p. 710. «Sparganium» in B. G. Nathorst. Kritiska anmärkn. om den grönl. vegetat. hist. Bihang t. kgl. sv. Vet.-Akad. Handl. Bd. 16, III, Nr. 6, 1890 p. 17. Ostenf. Fl. arctica p. 18.

Very rare, in ponds with 20—40 ctm. deep water, sometimes drying up in August. The stems are 30—40 ctm. long, with 2—3, 60—80 ctm. long floating leaves, 1—2 female heads without or with one short stalk; sometimes the lower one is free from the ligule; 1 male head. Flowers in the middle of August, sets ripe seed.

Amakâ in one of the ponds, Sparganium-Dam in Elvbakker near Tasiusak.

The *Sparganium* mentioned by Prof. Nathorst l. c. is undoubtedly the above named species and the finding place is undoubtedly my locality, „Sparganium-Dam", passed by N. on his long walking tour on the 4th of September 1883.

Fam. 32. Potamogetonaceae.

117. **Potamogeton filiformis** Pers.

Rosenvinge Tillæg p. 710. P. marinus Lge. Consp. Fl. Groenl. p. 117 & 282.

Found but in a single place in a pond with abt. 30 ctm. water and sandy ground covered with a layer of mud abt. 2 ctm. thick, 10—20 ctm. high; stems with numerous leaves shoot out from the thin, white, creeping rhizome; sterile.

Amakâ. 65° 39′ lat. N.

Fam. 33. Orchidaceae.

118. **Habenaria albida** (L.) R. Br.

Lge. Consp. Fl. Groenl. p. 118 & 282.

Rare, on herby and grassy slopes; abt. 20 ctm. high with four

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leaves. Tubers with 5—8, fleshy, white branches. Flowers from the 15th of July till the 15th of August.

Kakasuak, Tunok, the bottom of Sierak Dal, Sierak, Tasiusarsik in Angmagsalik Fjord, Sarfakajik, Amakâ near Kordlortok.

119. **Habenaria hyperborea** (L.) R. Br.

Platanthera hyperborea β. major. Lge. Consp. Fl. Groenl. p. 118 & 283.

Very rare; on herby slopes; 10—15 ctm. high with 3—7 leaves. Flowers in August.

Sarfakajik, the south side of Kordlortok Fjæld.

Fam. 84. Colchicaceae.

120. **Tofieldia borealis** Wbg.

Lge. Consp. Fl. Groenl. p. 122 & 284, Berlin Kärlväxter p. 66, Hartz Fanerog. p. 392.

Here and there in heath, on grassy slopes and on rocky steps, but always singly and not common; not observed on the coast. 5—15 ctm. high. Flowers from the 20th of June till August, sets ripe fruit.

Kap Wandel, Nigertusok, Kangerdlugsuatsiak, Kakasuak and the west side of Kingorsuak, Ikerasak, Kuarmiut, Misutok, Tunok, Elvbakker, Kong Oscars Havn (Berlin)! Tasiusak (Bay)!

Fam. 85. Juncaceae.

121. **Juncus biglumis** L.

Lge. Consp. Fl. Groenl. p. 122 & 284, Berlin Kärlväxter p. 67, Ostenf. Fl. arct. p. 25.

On humid spots in table-land; very rare, 2—7 ctm. high, with fruit in August.

Kap Wandel, Kordlortok Sö, Elvbakker, Kong Oscars Havn (Berlin)!

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122. **Juncus triglumis** L.

Lge. Consp. Fl. Groenl. p. 122 & 284, Ostenf. Fl. arct. p. 25.

Not found but in one place in humid table-land. 2—4 ctm. high; in bloom on the 10th of July together with *J. biglumis*.

Elvbakker near Tasiusak 65° 35′ lat. N.

123. **Juncus castaneus** Sm.

Lge. Consp. Fl. Groenl. p. 123 & 284, Ostenf. Fl. arct. p. 24.

Not found but in one place near the brim of a small low sandy islet in the delta of a large river. 10—20 ctm. high specimens with fruit from the previous year and old 10 ctm. long leaves, the new leaves were on the 24th of June 3—5 ctm. long.

Kingorsuak 66° 15′ lat. N.

124. **Juncus trifidus** L.

Lge. Consp. Fl. Groenl. p. 123 & 284, Berlin Kärlväxter p. 67, Ostenf. Fl. arct. p. 26.

Commonly distributed in the whole district in table-land, heath, grassy slopes, on stony plains and other dry places, often snowless in winter. 3—20 ctm. high thick tufts or very spread covering among lichens *(Stereocaulon)*. Flowers from the 20th of June, sets abundant ripe fruit.

Kong Oscars Havn (Berlin)!

125. **Juncus arcticus** Willd.

Lge. Consp. Fl. Groenl. p. 124 & 284, Ostenf. Fl. arct. p. 24.

Not found but in one place on a very low sandy islet in a river delta towards a lake. The rhizome creeping at the depth of 3—5 ctm., up to 50 ctm. long with numerous 20—25 ctm. high (of these the end-leaf abt. 5 ctm.) shoots, with flowers and numerous old fruit bearing shoots on the 29th of July.

Kingorsuak 66° 16′ lat. N.

126. **Juncus bulbosus** (L.) Gelert.

Ostenf. Fl. arct. p. 24. J. supinus Moench. Rosenv. Tillæg p. 714. Triglochin palustre L. Berlin Kärlväxter p. 65.

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Very rare, in half dried up ponds where there has been water of at most 50 ctm., on coarse sand. 1—1,5 ctm. high, sterile shoots with 1—3 off-shoots above ground, the stemjoints of which are one-leaved and 5—7 mm. long. The whole plant has a reddish colour and grows gregariously so that it may form cover together with *Subularia aquatica* on small flats of a diameter of up to 10 ctm., separated by bare narrow parts; it is found as well submerse as in the drained ground. The submerse specimens are more greenish than the air plants.

Amakâ, pond near the sea, but above the high-water mark, Elvbakker in the Subulariadam, Kong Oscars Havn (Berlin)!

127. **Luzula multiflora** (Ehrh.) Lej. *β.* **congesta** (Taylor) Lge.

Lge. Consp. Fl. Groenl. p. 125 & 285, Hartz Fanerog. p. 392, Ostenf. Fl. arct. p. 31.

On fertile grassy slopes and in heath; rather rare and only in the interior. 10—20 ctm. high, thickly tufted. Flowers in July, sets ripe fruit.

Akiliarisek 66° 20′, Kingorsuak 66° 10, Sierak 66°, Tunok 65° 56′ lat. N., Kordlortok Sö, Tasiusak (Bay)!

128. **Luzula arcuata** (Wbg.) Sw.

Lge. Consp. Fl. Groenl. p. 127 & 285, Berlin Kärlväxter p. 68, Hartz Fanerog. p. 392.

On humid rocky slopes among moss especially on the shady side. 15—20 ctm. high, flowers in July, sets ripe fruit.

Kakasuak, Cassiope Fjæld and several other places near Kingorsuak between 66° 8′—10′ lat. N.

var. *confusa* Lindb.

Commonly distributed in the whole district in table-land and heath. 10—25 ctm. high, flowers in July, sets rich ripe fruit.

Kong Oscars Havn (Berlin)! Tasiusak (Bay)!

129. **Luzula spicata** (L.) D. C.

Lge. Consp. Fl. Groenl. p. 128 & 286, Berlin Kärlväxter p. 68, Hartz Fanerog. p. 392, Ostenf. Fl. arct. p. 28.

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Commonly distributed in all formations as well near the coast as in the interior, is not cover forming, but appears very frequently and in great quantities in the vegetation. 10—20 ctm. high, many-strawed, thickly tufted, always with lots of old stems and leaf rests round the ground. Flowers from the 15th of June till the 15th of August, sets abundant ripe fruit, is often snowless in winter, and the seeds are spread by the wind over the snow.

Kong Oscars Havn (Berlin)! Tasiusak (Bay)! Tasiusarsik kidlek (Knutsen)!

β. major Lge. l. c.

Rare; on herby slopes. 20—30 ctm. high; with 1—3 ctm. long ears; flowers during the first half of July; sets ripe fruit.

West side of Kingorsuak, Akiliarisek, Tasiusarsik in Angmagsalik Fjord, Ikerasausak, Elvbakker near Tasiusak.

Fam. 86. Cyperaceae [1].

130. **Scirpus caespitosus** L. f. **austriaca** (Palla).

Palla Bericht d. deutsch. bot. Gesellsch., 1897 p. 468, Ostenf. Fl. arctica p. 43, Lge. Consp. Fl. Groenl. p. 129 & 286.

Rare, on the banks of rocky brooks and in humid places in heath and on rocky steps, grows gregariously and forms cover over small spots. 7—10 ctm. high, flowers from the 15th of July.

Sierak, Misutok, Tunok, Kordlortok Fjæld near Tasiusak 66°—65° 40′ lat. N.

131. **Eriophorum Scheuchzeri** Hoppe.

Lge. Consp. Fl. Groenl. p. 129 & 286, Berlin Kärlväxter p. 68, Hartz Fanerog. p. 392, Ostenf. Fl. arct. p. 41.

Not common, in pools, on river banks and on sandy flats, in the interior. 15—20 ctm. high, flowers from the 20th of June, sets ripe fruit July—August.

Eskimo Ö, Kingorsuak, Ikerasausak, Sierak, Tunok, Ikerasak Fugleholme, Kordlortok Sö, the valley behind the colony, Kong Oscars Havn (Berlin)! Tasiusak (Bay)!

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[1] Determined by Inspector C. H. Ostenfeld.

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132. **Elyna Bellardi** (All.) C. Koch.

Lge. Consp. Fl. Groenl. p. 130 & 287, Ostenf. Fl. arct. p. 44.

Very rare on rocky steps where the water is running down in spring, but where there is very dry later in summer, 15 ctm. high, flowers in July.

Akiliarisek, Sarfakajik, 66° 18′—65° 40′ lat. N.

133. **Carex nardina** Fr.

Lge. Consp. Fl. Groenl. p. 131 & 287, Berlin Kärlväxter p. 73, Ostenf. Fl. arctica p. 48.

Common in table-land and heath, and on rocky steps in the interior, not so frequent on the outer coast, 5 ctm. high, flowers in June and July.

134. **Carex capitata** Soland.

Lge. Consp. Fl. Groenl. p. 132 & 287, Rosenvinge Tillæg p. 718, Ostenf. Fl. arctica p. 49.

Very rare on herby slopes on gravelly ground. 20 ctm. high with fruit on the 17th of August 1902.

Kordlortok Sö 65° 42′ lat. N.

135. **Carex scirpoidea** Mich.

Lge. Consp. Fl. Groenl. p. 132 & 287, Berlin Kärlväxter p. 53, Ostenf. Fl. arctica p. 82.

Common in pools and near ponds, forms often especially together with other Carex-species and grasses cover. 5—20 ctm. high, flowers from the 20th of June.

136. **Carex microglochin** Wbg.

Lge. Consp. Fl. Groenl. p. 133 & 288, Ostenf. Fl. arct. p. 92.

Very rare on rocky steps above herby slopes in half dried up small water courses. 5—18 ctm. high, thickly tufted, with fruit on the 25th—26th of August.

Kordlortok Fjæld, Sarfakajik, 65° 40′ lat. N.

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137. **Carex rupestris** All.

Lge. Consp. Fl. Groenl. p. 133 & 288, Ostenf. Fl. arctica p. 86.

Rare; in table-land in the interior. 5—8 ctm. high, flowers in June.

Cassiope Fjæld near Kingorsuak, Tunok. 65° 56′—66° 15′ lat. N.

138. **Carex Macloviana** D'Urv.

Ostenf. Fl. arctica p. 54. C. festiva Dewey. Lge. Consp. Fl. Groenl. p. 134 & 288, Berlin Kärlväxter p. 72.

Rather rare; on grassy slopes and in grassy field, especially near small ponds in the interior, grows gregariously and forms cover together with grasses. 10—40 ctm. high; stiffly upright, green; flowers in July, sets ripe fruit.

The bottom of the Sierak Dal, Sarfakajik, Kordlortok Sö, Nordfjord, Sparganium Dam, Elvbakker; Kong Oscars Havn (Berlin)! 66° and 65° 42′—35′ lat. N.

139. **Carex lagopina** Wbg.

Lge. Consp. Fl. Groenl. p. 135 & 288, Berlin Kärlväxter p. 72, Ostenf. Fl. arctica p. 58.

Rare; on humid sandy flats near the beach and in pools. 15—25 ctm. high; flowers in July, sets ripe fruit.

Falke Sö near Kingorsuak, 66° 5′ lat. N., the bottom of the Sierak Dal, the valley behind the station, Kong Oscars Havn (Berlin)!

140. **Carex glareosa** Wbg.

Lge. Consp. Fl. Groenl. p. 137 & 289, Berlin Kärlväxter p. 73, Ostenf. Fl. arctica p. 58.

Common in the interior at the high-water mark in sandy and clayey places, and here and there on the outer coast and sometimes at a greater distance from the beach in heath and table-land. 5—20, in manured places up to 40 ctm. long, decumbent or ascending shoots forming thick tufts on the firm marshy or clayey ground. The tufts are often 50 ctm. in diameter. Forms together with *Cerastium trigynum* cover on tent and house sites, and on

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birds'-islets. Flowers from the 20th of June, sets abundant ripe fruit.

Kangerdlugsuatsiak, Kangerdluarsikajik, Kingorsuak, Ikerasausak, Sierak, Kingak Angmagsivik, Tunok, Unartok, Kuarmiut, Isi, Ingmikertok, Ingmikertorajik, Kanganitsai, Adloe near Kap Dan, Amaka, the valley behind the colony, Grönlænderpynt, Kong Oscars Havn (Berlin)!

141. **Carex brunescens** (Pers.) Poir.

Ostenf. Fl. arctica p. 56, C. vitilis Lge. Consp. Fl. Groenl. p. 136 & 289.

Very rare; found but in one place in pools. 20 ctm. high, with fruit on the 6th of August.

Tunok. 65° 56′ lat. N.

142. **Carex atrata** L.

Lge. Consp. Fl. Groenl. p. 139 & 289, Ostenf. Fl. arctica p. 64.

Very rare; not found but in one place on fertile herby slopes. 10—65 ctm. high, with fruit on the 25th—26th of August.

Sarfakajik. 65° 40′ lat. N.

143. **Carex salina** Wbg. v. **subspathacea** Wormskj.

Ostenf. Fl. arctica p. 73, C. subspathacea, *β.* curvata Drej. Lge. Consp. Fl. Groenl. p. 140 & 289, Berlin Kärlväxter p. 71.

Not common; on clayey and sandy flats near the high-water mark especially near estuaries, only in the interior, grows gregariously; 1—3, exceptionally 5 ctm. high, with creeping and ascending abt. 2 ctm. long shoots. Flowers from the 1st of July. In a single place, Grönlænderpynt, specimens were collected. forming transition to the main species; they grew in a salt marsh in an estuary and formed cover.

Kingorsuak, Ikerasausak, Sierak, Tunok, Kordlortok Vig on Amakâ, Grönlænderpynt, Kong Oscars Havn (Berlin)!

144. **Carex rigida** Good.

Ostenf. Fl. arctica p. 77, Lge. Consp. Fl. Groenl. p. 145 &

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291, Berlin Kärlväxter p. 72, Hartz Fanerog. p. 392, C. hyperborea Lge. l. c. p. 145, Hartz l. c.

Commonly distributed in all formations, as well in the interior as on the coast. 5—20 ctm. high, flowers from the 20th of June, sets abundant ripe fruit.

v. *Bigelovii* (Tuck.). C. hyperborea Drej. Lge. l. c.

On herby and grassy slopes, in grassy field and in humid, sandy places, much more rare than the main species and only in the interior. 20—30 ctm. high, flowers July—August, sets ripe fruit.

Akiliarisek, Kingorsuak, Kangerdluarsikajik, Tunok, Sarfakajik, Nordfjord, Amagâ, Elvbakker, Tasiusak (Bay)!

145. Carex capillaris L.

Lge. Consp. Fl. Groenl. p. 148 & 292, Berlin Kärlväxter p. 69, Ostenf. Fl. arctica p. 90.

Very rare; on rocky steps. 5—10 ctm. high, flowers in July; grows gregariously on small, dried up, but in spring wet spots.

Kap Wandel, Kakasuak and the west side of Kingorsuak, Kong Oscars Havn (Berlin)!

146. Carex rariflora (Wbg.) Sm.

Lge. Consp. Fl. Groenl. p. 150 & 292, Berlin Kärlväxter p. 70, Ostenf. Fl. arctica p. 67.

Not rare in pools, river beds and in humid sandy flats. 5—20 ctm. high; flowers from the 20th of June, sets ripe fruit.

Kangerdlugsuatsiak, Eskimo Ö, Kingorsuak, Ikerasausak, Tunok, common near Tasiusak, Kong Oscars Havn (Berlin)!

147. Carex supina Wbg.

Lge. Consp. Fl. Groenl. p. 151 & 293, Ostenf. Fl. arctica p. 86.

Rare; on rocky steps and in dry cracks in the interior. 10 ctm. high; flowers in July.

Kangerdlugsuatsiak, Akiliarisek, Kilikitak near Kingorsuak. 66° 10′—18′ lat. N.

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148. Carex rotundata Wbg.

Lge. Consp. Fl. Groenl. p. 152 & 293, Ostenf. Fl. arctica p. 94.

Very rare; at the edge of ponds and pools. 25 ctm. high; flowers in August.

Amakâ in pools and Subularia Dam in Elvbakker, 65° 35′—37′ lat. N.

Carex rotundata ad C. pullam accedens C. H. Ostenf.

Tunok in a low pond 65° 54′ lat. N.

Fam. 87. Gramineae.

149. Phleum alpinum L.

Lge. Consp. Fl. Groenl. p. 155 & 294, Berlin Kärlväxter p. 74, Hartz Fanerog. p. 392, Ostenf. Fl. arctica p. 100.

Here and there in copses of willows, on herby slopes and in humid heath. 20—45 ctm. high; flowers in July, sets ripe fruit.

Kingorsuak, Akiliarisek, Kangerdlugsuatsiak, Nigertusok, Kangerdluarsikajik, Grus Ö, Ikerasausak, Tunok, Tasiusarsik in Angmagsalik Fjord, Tasiusarsik kitdlek, Sarfakajik, Kordlortok Sö, Amagâ, Elvbakker, Kong Oscars Havn (Berlin)! Tasiusak (Bay)!

150. Alopecurus aristulatus Mich.

Gelert in Ostenf. Fl. arctica p. 100. A. fulvus Rosenvinge Tillæg p. 727, Berlin Kärlv. p. 74. Lge. Consp. Fl. Groenl. p. 294. A. geniculatus Lge. l. c. p. 156.

Very rare; not found but in half or totally dried up ponds at Isi 65° 58′, Amakâ 65° 37′ and on Elvbakker 300′ above the level of the sea 65° 35′ lat. N. Kong Oscars Havn (Berlin)!

151. Agrostis canina L.

Lge. Consp. Fl. Groenl. p. 158 & 295, Ostenf. Fl. arct. p. 118.

Very rare; on grassy slopes and in grass field on humid ground. 18—20 ctm. high, thickly tufted with remaining ligules, with fruit in the latter half of August.

Amakâ at Kordlortok between a pond and the sea, Amagâ on grassy slopes. 65° 38′ lat. N.

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152. **Agrostis borealis** Hartm.

Murb. in Botan. Not. 1898 p. 11. Ostenf. Fl. arct. p. 109. Agrostis rubra L. Lge. Consp. Fl. Groenl. p. 157 & 295, Berlin Kärlväxter p. 76.

Here and there, not common; on grassy and herby slopes and in stony plains. 5—30 ctm. high, thickly tufted, tunicate, in sheltered localities, upright, in open places with diverging decumbent straws. Flowers from the 15th of July till the 1st of September, sets ripe fruit.

Amagâ in Sermilik, Kingorsuak, Kangerdluarsikajik, Ikatek, Sarfakajik, Kordlortok Sö, Amagâ, Grönlænderpynt, Elvbakker, Kong Oscars Havn (Berlin)!

153. **Calamagrostis neglecta** (Ehrh.) Gelert.

Gelert in Ostenf. Fl. arctica p. 103. C. stricta v. borealis. Lge. Consp. Fl. Groenl. p. 161 & 296. C. hyperborea, Berlin Kärlväxter p. 75.

Here and there in pools, on grassy slopes, on sand and clayey beach, where it forms thick associations over small areas. 20—45 ctm. high; flowers in August, sets ripe fruit; after having shed the flowers the straws often remain throughout the winter below the snow cover, and they are still seen upright at the beginning of the next flowering.

Kingorsuak, common, Ikerasausak, Kingak Angmagsivik, Ikerasak, Tunok, Tasiusarsik kitdlek, Sarfakajik, Kordlortok Sö, Amaka, Amagâ, Elvbakker, Grönlænderpynt, Kong Oscars Havn (Berlin)!

154. **Aira cæspitosa** (L.) Bab. f. **alpina** (L.) Gelert.

Ostenf. Fl. arct. p. 113, A. alpina Lge. Consp. Fl. Groenl. p. 163 & 296, Berlin Kärlv. p. 76. A. alp., β. vivipara Hartz Fanerog. p. 392.

Not rare in humid places in riverbeds and at pools.

Kangerdlugsuatsiak, Kingorsuak, Ikatek, Ikerasausak, Ikerasak, Tunok, Sarfakajik, Amakâ and in several places near Tasiusak, Kong Oscars Havn (Berlin)!

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155. **Aira flexuosa** L. var. **montana** (L.) Trin.

Lge. Consp. Fl. Groenl. p. 162 & 296, Rosenv. Tillæg p. 730, Ostenf. Fl. arctica p. 112.

Found but in one spot, but here stood numerous vigorous tufts in heath at the foot of the mountain.

Kordlortok near Tasiusak 65° 37′ lat. N.

***Hordeum hexasticum** L.

Round the colony single flowering specimens abt. 60 ctm.; spread with refuse.

156. **Trisetum subspicatum** (L.) Beauv.

Lge. Consp. Fl. Groenl. p. 164 & 297, Berlin Kärlväxter p. 77, Hartz Fanerog. og Karkrypt. p. 392, Ostenf. Fl. arct. p. 110.

Common in all formations. 15—50 ctm. high; flowers from the 20th of June, sets abundant ripe fruit.

157. **Phippsia algida** R. Br.

Gelert in Ostenf. Fl. arct. p. 101, Catabrosa algida (Sol.) Fr. Lge. Consp. Fl. Groenl. p. 166 & 298.

Here and there on the beach, on oozy flats and manured ground at house ruins and on tent sites. 2—5 ctm. high. Flowers from the 20th of June till the middle of July, sets ripe fruit.

158. **Glyceria distans** (L.) Wbg.

Gelert in Ostenf. Fl. arct. p. 127, G. Borreri Lge. G. arctica Lge. Consp. Fl. Groenl. p. 167—169 & 298—299.

β. arctica (Hook) Gelert.

On a strongly manured tent site near the beach, but above the high-water mark. 25 ctm. high, pale green; in bloom on the 4th of August.

Kingak Angmagsivik.

γ. Borreri (Lge.) Gelert.

On the beach on clay or shingle in the inlets and sheltered from the beating of the waves, often below the high-water mark. Thickly tufted with numerous 2—15 ctm. long, most often decumbent

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or obliquely outward turned straws. Flowers in July, sets ripe fruit. Found only in few places, but here it appears in great quantities and coverforming.

Kingorsuak, Tunok, Ingmikertok.

159. **Glyceria maritima** (Huds.) Fr. var. **vilfoidea** And.

G. vilfoidea Lge. l. c. p. 170 & 300, Berlin Kärlväxter p. 80.

On clayey flats on the beach in calm inlets without beating of the waves, often submerse during the flood-tide, never on open coast.

As a rule sterile, rarely with 2—7 ctm. high straws, the creeping shoots often 40—50 ctm. long, rooting; closely adpressed, upright leaves; 3—5 ctm. high, green; coverforming over considerable flats together with *Potentilla anserina β. groenlandica.*

Kingorsuak, Kangerdluarsikajik, Kangerdlugsuatsiak, Ikerasausak, Tunok, Ingmikertorajik, Tasiusak, Sarfakajik, Kong Oscars Havn (Berlin)!

160. **Glyceria angustata** (R. Br.) Fr.

Lge. Consp. Fl. Groenl. p. 171 & 300, Ostenf. Fl. arctica p. 128. G. maritima var. arenaria, Berlin Kärlväxter p. 78.

Very rare; found only in a single place on a stony plain. 5 ctm. high, with fruit from the 26th of August till the 5th of September.

Kong Oscars Havn (Berlin)! Grönlænderpynt in Tasiusak.

The specimens collected by Dr. Berlin belong to the above-named species, as already observed by Gelert in Ostenf. Fl. arctica l. c.

161. **Poa glauca** M. Vahl.

Lge. Consp. Fl. Groenl. p. 172 & 300, Hartz Fanerog. p. 392.

Commonly distributed in table-land and on rocky steps. 10—15 ctm. high. Flowers in July, sets ripe fruit.

162. **Poa laxa** Haencke.

Gelert in Ostenf. Fl. arct. p. 123. P. laxiuscula (Bl.) Lge. Consp. Fl. Groenl. p. 174 & 301, Berlin Kärlväxter p. 80.

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Very rare; on rocks and gravel on the beach.

Kingorsuak; Kong Oscars Havn (Berlin)!

Note. During my journey I unfortunately took no notice of this species, and as a consequence I made no special observations as to its distribution; it is therefore possible, especially as it is easily mistaken for *P. glauca* and *P. nemoralis* that specimens of it hide themselves under some of my notes on P. glauca.

163. Poa nemoralis L.

Lge. Consp. Fl. Groenl. p. 174 & 301, Berlin Kärlväxter p. 80.

var. *glaucantha* Blytt.

Rare; on fertile herby and grassy slopes. 20—50 ctm. high, incoherently tufted, forms a thick cover over smaller spots; flowers in July and August.

Kilikitak and Kakasuak near Kingorsuak, Kangerdluarsikajik, Sierak, Tasiusarsik in Angmagsalik Fjord, Sarfakajik, Kordlortok, Elvbakker, Kong Oscars Havn (Berlin)!

var. *pallida* Lge.

Very rare; in Archangelicetum; 25—30 ctm. high; flowers in July.

Akiliarisek, forms green-sward along the Archangelica brook, Amagâ.

164. Poa alpina L.

Lge. Consp. Fl. Groenl. p. 176 & 301, Berlin Kärlväxter p. 80, Hartz Fanerog. p. 392.

Commonly distributed in heath, on herby and grassy slopes, here and there in table-land, as well on the coast as in the interior. 15—60 ctm. high, flowers July—August, sets abundant ripe fruit, is often snowless in winter.

165. Poa pratensis L.

Lge. Consp. Fl. Groenl. p. 176 & 301, Berlin Kärlväxter p. 80, Hartz Fanerog. p. 392, Ostenf. Fl. arct. p. 121.

Common on herby slopes, in copses of willows and on fertile grassy slopes; more rare in heath, and only in the most fertile places; 20—60 ctm. high, flowers July—August, sets ripe fruit.

Kong Oscars Havn (Berlin)!, Tasiusak (Bay.)!

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166. **Poa cenisia** All.

Gelert in Ostenf. Fl. arct. p. 122. P. flexuosa Lge. Consp. Fl. Groenl. p. 178 & 302, Berlin Kärlväxter p. 80.

Commonly distributed on herby slopes, in heath, on rocky steps and on grassy slopes, here and there in pools. 10—30 ctm. high, flowers in July—August, sets ripe fruit.

Note. It is hardly different as to species from *P. pratensis*, but is entered here, as it in typical form is easily recognizable from the other one and has a somewhat different and wider distribution. Especially it embraces more formations. It is certainly a more hardy and content form.

167. **Festuca ovina** L.

Lge. Consp. Fl. Groenl. p. 179 & 302, Rosenvinge Tillæg p. 735—736, Berlin Kärlväxter f. Groenl. p. 78, Hartz Fanerog. p. 392.

Commonly distributed everywhere in heath, on grassy slopes, in table-land and stony plains. 10—30 ctm. high. Flowers July—August.

β. vivipara L.

Common in humid localities in table-land.

γ. ad *F. heterophylla.*

In a welly hole abt. 2 mt. deep into which a brook disappears.

168. **Festuca rubra** L.

Lge. Consp. Fl. Groenl. p. 180 & 302, Berlin Kärlväxter p. 77.

Here and there on herby and grassy slopes and in grass field on fertile, well sheltered places. 15—50 ctm. high.

Kingorsuak, Ikerasausak, Sierak, Akiliarisek, Tasiusak, Kordlortok Sö, Sarfakajik, Kong Oscars Havn (Berlin)!

Most specimens belong to f. *arenaria* (Osb.), but all transitions to completely glabrous forms appear; viviparous forms are also found.

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Fam. 88. Cupressaceae.

169. Juniperus communis L. β. nana Willd.

Rosenv. Till. p. 736, Ostenf. Fl. arct. p. 16. I. alpin. Clus., Lge. Consp. Fl. Groenl. p. 182 & 303, Hartz Fanerog. p. 392.

Espalier in table-land and heath.

Not rare in the interior of the district; rare in the coast region and much smaller. 10—30 ctm. high above the earth. The stems 30—120 ctm. long and up to 8 ctm. in diameter at the ground, often partly bark-stripped on the lower part. The leaves 5—8 mm. long, most often adpressed or incurvate, but sometimes in very favourable localities spread out. Flowers richly from the 15th of July till the 1st of August; the pollen forms often dense yellow clouds above the vegetation. Sets abundant ripe fruit often remaining 2—3 years on the plant.

Kap Wandel, Jærn Ö, Kingorsuak, Akiliarisek, Ikerasausak, Sierak, Tunok, Adloe, Sarfakajik, Kordlortok Sö, Amakâ, Amagâ, Elvbakker, Tasiusak (Bay)!

Fam. 89. Lycopodiaceae.

170. Lycopodium Selago L.

Lge. Consp. Fl. Groenl. p. 183 & 303, Berlin Kärlväxter p. 83, Hartz Fanerog. p. 392.

Here and there on herby slopes and in fertile heath. 5—20 ctm. high, with numerous sporangia in July.

Akiliarisek, Kingorsuak, Tunok, Sierak, Ikatek, Adloe at Kap Dan, Kordlortok, Sömands Fjæld at Tasiusak.

Most northern finding place 66° 18′ lat. N.

β. *appressa* Desf. (alpestre Berlin l. c., Lge. Consp. l. c.).

In heath and table-land; more frequent than the main species and commonly distributed as well on the coast as in the interior.

171. Lycopodium annotinum L.

Lge. Consp. Fl. Groenl. p. 183, Ostenf. Fl. arct. p. 12.

Found only in the interior in 3 localities, but here very common in copses of willows. The creeping stems as long as 1 meter,

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the upright shoots 10—15 ctm., the leaves spread, almost entire or at the point roughly sinuate or sparingly dentate. Transitions to f. *pungens* are commonly found. Cones common.

β. pungens Desf. (*β.* alpestre Hartm. Lge. l. c.).

Distributed over the whole of the district, but rare in the coast regions; common in the interior. Creeping stem, 50—60 ctm. long, upright shoots, 5—10 ctm. high, the leaves more or less adpressed, entire; the plant becomes often jointed looking because the leaves on a short stretch are closely adpressed, then more spread on a longer stretch etc. Cones are common.

Kangerdlugsuatsiak, Kangerdluarsikajik, Akiliarisek, Kingorsuak, Ikerasausak, Kingak Angmagsivik, Tunok, Sierak, Norsit, Elvbakker, Kordlortok, Amagâ.

172. **Lycopodium alpinum** L.

Lge. Consp. Fl. Groenl. p. 184 & 304, Hartz Fanerog. p. 392.

Appears sparingly, but distributed over the whole of the district, most frequent in the interior. In heath and on herby slopes. The creeping stems are 30—100 ctm. long, the upright shoots 3—7 ctm., spore-case bearings are seen in great quantities.

Nigertusok, Kangerdlugsuatsiak, Sarfak, Kingorsuak, Ikatek, Ikerasausak, Kingak Angmagsivik, Sierak, Tasiusarsik kitdlek, Adloe Dal at Kap Dan, Kordlortok, Amakâ, Amagâ, Elvbakker.

173. **Lycopodium complanatum** L.

β. **chamaecyparissus** (A. Br.) Rosenv.

Rosenvinge Tillæg p. 737. L. chamaecyparissus Lge. Consp. Fl. Groenl. p. 184, Ostenf. Fl. arctica p. 13.

Very rare, in shade among blocks of stone in heath. The creeping stem is up to 50—60 ctm. long, the upright shoots 6—8 ctm., sterile.

Kingak Angmagsivik, the north point of Ikerasausak. 66°—65° 52′ lat. N.

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Fam. 40. Equisetaceae.

174. **Equisetum variegatum** Schleich.

Lge. Consp. Fl. Groenl. p. 191 & 308, Ostenf. Fl. arct. p. 9.

Rare, in humid sandy flats in the interior.

Kingorsuak, Sierak.

β. anceps Milde.

Rare and only in the interior in small brooks and pools on sandy ground.

Kingorsuak, Ikerasausak.

175. **Equisetum arvense** L.

Lge. Consp. Fl. Groenl. p. 191 & 308, Ostenf. Fl. arct. p. 10.

α. boreale Milde.

Rare, on sandy flats at river beds. 10—25 ctm. high, with fertile shoots on the 22th of June.

Kingorsuak, Ikerasausak, Sierak, Tasiusak.

β. decumbens C. F. W. Mey.

Rare, on sandy flats, with fertile shoots on the 22th of June.

Kingorsuak, Ikerasausak, Sierak, Ikatek.

γ. campestre F. Schultz.

Very rare, on a sandy flat, with fertile shoots on the 24th of July.

Kingorsuak.

δ. riparia.

In ponds, submerse, rather rare.

Kingorsuak, Tunok, Amakâ.

Fam. 41. Polypodiaceae.

176. **Aspidium Dryopteris** (L.) Baumg.

Ostenf. Fl. arctica p. 4. Polypodium Dryopteris L. Lge. Consp. Fl. Groenl. p. 185 & 304.

Here and there in copses of willows, on herby slopes and in heath, especially at the foot of rocks, grows gregariously. 10—30 ctm.

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high. Small-leaved, low specimens with narrow leaf segments are found especially in sunlit fertile places in the Empetrum heath, while large broad-leaved (up to 13 ctm.) with very broad leaf segments are restricted to shady cracks in the rocks and the ground below large willow bushes. The leaves come out on the 15th—20th of June. The sporangia are developped about the 15th of July.

Akiliarisek, Kingorsuak, Ikerasausak, Misutok, Sierak, Tunok, Kuarmiut, Sarfakajik, Kordlortok Fjæld, Elvbakker.

Most northern finding place 66° 18′ lat. N.

177. **Aspidium Phegopteris** (L.) Baumg.

Ostenf. Fl. arctica p. 4. Polypodium Phegopteris L. Lge. Consp. Fl. Groenl. p. 185 & 304.

Rare; on herby slopes in the interior. 20—25 ctm. high with 2—4 leaves. As a rule sterile, only one specimen collected on the 12th of August has very spread and small undevelopped sporangia.

Akiliarisek, Kingorsuak, Misutok, Ikerasausak. 66° 18′—66° lat. N.

178. **Aspidium Lonchitis** (L.) Sw.

Lge. Consp. Fl. Groenl. p. 186 & 305, Berlin Kärlväxter p. 82, Ostenf. Fl. arctica p. 6.

Here and there, but not common at the foot of rocks on herby slopes. 15—30 ctm. high with numerous leaves and many sporangia.

Nigertusok, Kakasuak near Kingorsuak, Misutok, Tunok, Tasiusarsik in Angmagsalik Fjord, Sarfakajik, Kong Oscars Havn (Berlin)! Most northern finding place 66° 18′ lat. N.

179. **Cystopteris fragilis** (L.) Bernh.

Lge. Consp. Fl. Groenl. p. 188 & 306, Berlin Kärlväxter p. 82, Hartz Fanerog. p. 392, Ostenf. Fl. arctica p. 6.

Common on herby slopes, in copses of willows, on rocky steps and in humid fertile heath. 15—30 ctm. high. The leaves

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come out from the 15th of June, usually with sporangia in July—September.

Commonly distributed as well on the coast as in the interior.

180. **Asplenium viride** Huds.

Lge. Consp. Fl. Groenl. p. 305, Berlin Kärlväxter p. 81, Ostenf. Fl. arctica p. 81.

Very rare; in humid shady cracks in the rocks, on herby slopes. Numerous, 5—10 ctm. long leaves shoot out from the rhizome, squeezed into fine cracks. Almost all the 4—5 mm. long, oval or rhombic segments are sporuliferous (from the 26th of July till the 4th of September).

Kakasuak near Kingorsuak 66° 8′ lat. N., Kordlortok 65° 38′, Kong Oscars Havn (Nath.)!

181. **Woodsia ilvensis** (L.) R. Br.

Gelert in Ostenf. Fl. arctica p. 7.

α. rufidula (Michx.) Kock.

W. ilvensis R. Br. Lge. Consp. p. 188 & 307, Hartz Fanerog. p. 302.

Rather common on herby slopes, rocky steps and in heath. 5—12 ctm. high, thickly tufted, with many leaves. Begins coming out on the 15th of June, almost every leaf bears numerous sporangia.

Common as well on the coast as in the interior.

β. alpina (Bolton) Aschers. & Gräbn.

W. hyperborea Lge. Consp. p. 189.

Here and there in the interior in cracks on herby slopes and on rocky steps.

Kap Wandel, Nigertusok, Kilikitak, Kakasuak and in several places near Kingorsuak, Tunok, Kilitilik near Tasiusak.

γ. glabella (R. Br.) Trautw.

W. glabella R. Br. Lge. Consp. p. 189.

Very rare and only in the interior on rocky steps, 3—5 ctm. high with numerous sporangia in July.

Kilikitak and Falke Fjæld near Kingorsuak, Misutok, 66° 10′—66° lat. N.

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Fam. 42. Ophioglossaceae.

182. Botrychium Lunaria (L.) Sw.

Lge. Consp. Fl. Groenl. p. 190 & 307, Berlin Kärlväxter p. 83, Ostenf. Fl. arctica p. 7.

Very rare; on herby slopes, just below the rocky walls. 9 ctm. high, with a 2 ctm. long, sterile, 9 lobate leaf; the fertile leaves 5 ctm. long, of these the upper ones 2 ctm. with incurvate, 2—8 m. m. long sporangia bearing lobes. The sporangia were closed on the 13th of August.

Kong Oscars Havn (Berlin)!, Amakâ at Kordlortok, 65° 35′—38′ lat. N.

183. Botrychium lanceolatum (Gmet.) Ångstr.

Lge. Consp. Fl. Groenl. p. 190 & 307, Ostenf. Fl. arctica p. 2.

Very rare; on rocky steps above herby slopes. 10—12 ctm. high with developped, but not open sporangia on the 14th—18th of July.

Akiliarisek 66° 18′ and Tasiusarsik in Angmagsalik Fjord 65° 48′ lat. N.

20—6—1906.

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VII.

Species nova Marsupellae, muscorum generis.

Auctore **C. Jensen.**

1906.

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Marsupella groenlandica C. Jens. nov. sp.

Dioica, cæspites densos et nigros formans; planta ad 6 ctm. alta et 1 mm. lata; caulis e parte subterranea procumbente et defoliata erectus vel suberectus, ad 0,20 mm. latus, rigidus, firmus, stoloniferus, pauciramosus, ramis ventralibus e basi curvata erectis; stolones e partibus inferioribus caulis sat numerosi, longi, horizontales vel inflecti, leniter colorati, efoliati, una cum partibus inferioribus caulis radicellulas rubras gerentes. Cellulae corticales majores, rectangulares vel quadratae, in sectione transversa rotundae et ovatae, parietibus mediocriter incrassatis; cellulae infra stratum corticale elongatae, angustae, valde incrassatae, prosenchymaticae, 2—3. stratosae; cellulae centrales numerosissimae, parenchymaticae, elongatae, parietibus mediocriter incrassatis. Folia inferiora parva, remota, superiora magnitudine crescentia, densiora, crassa et rigida, transversim affixa, semiamplexa, squarroso-patula, non decurrentia, late ovata, maxime concava et subcochleariformia, apice late emarginato vel rotundato, sæpissime irregulariter secta, præcipue in foliis anosioris, margine non reflexo; cellulae rotundato-polygonatae, basilares majores, marginales et apicales minores et rotundato-quadratae, ad angulos magis et distincte triangulariter incrassatæ, parietibus lateris dorsalis folii valde incrassatis, ceteris vix incrassatis; cuticula laevis. Flores ♀ et fructus desunt.

Androecium apicale, bracteae 5—7, densae, parum minores quam folia, antheridia singula in axilla.

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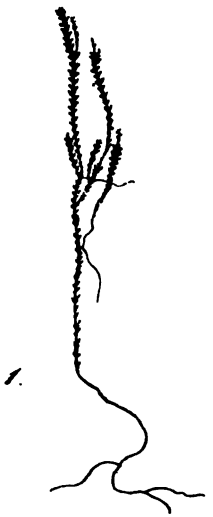

Fig. 1. *Marsupella groenlandica* C. Jensen. Planta mascula in magnitudine naturali.

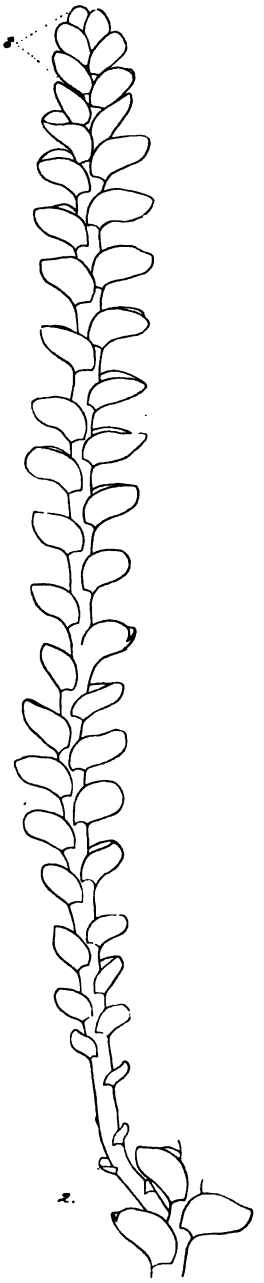

Fig. 2. *Marsupella groenlandica* C. Jensen. Ramulus masculus (c. $^{12}/_{1}$).

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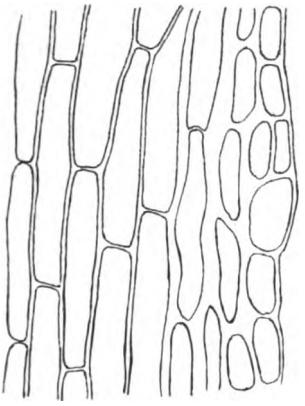

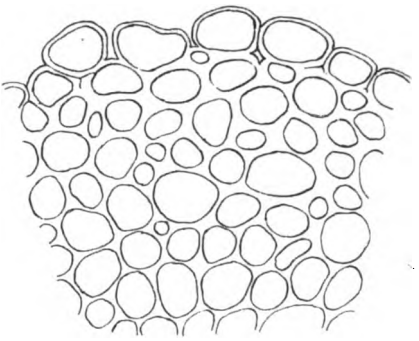

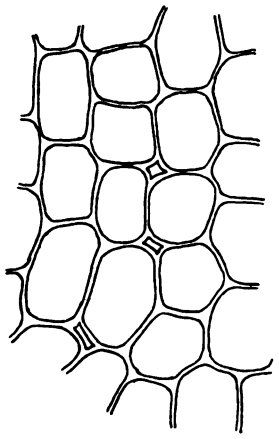

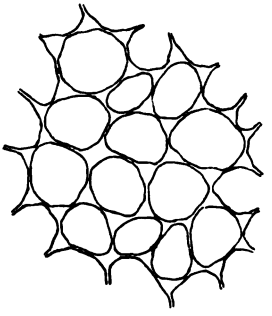

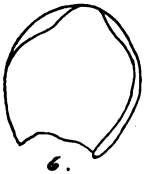

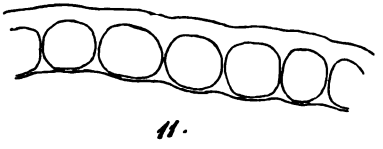

Marsupella groenlandica C. Jensen.

Fig. 3–6. Folia (²⁵/₁). — **Fig. 7.** Cellulae corticales (³⁵⁰/₁). — **Fig. 8.** Sectio longitudinalis caulis (³⁵⁰/₁). — **Fig. 9.** Sectio transversalis caulis (³⁵⁰/₁). — **Fig. 10.** Cellulae folii (³⁵⁰/₁). — **Fig. 11.** Sectio transversalis folii (³⁵⁰/₁).

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Species peculiaris, habitu et magnitudine *Cesiae revolutae* et formis certis *Marsupellae emarginatae* similis, characteribus *Marsupellae aquaticae* affinis, sed facile distinguitur præprimis foliis cochleariformibus, subintegris — integris.

Habitat: Groenlandia occidentalis; Disco (Lyngmarken), 1898, leg. M. P. Porsild. Groenlandia orientalis; Hurry Inlet (Ryders Dal), 1900, leg. C. Kruuse.

28—11—1906.

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VIII.

List

of the Hepaticae and Sphagnales found in East-Greenland between 75° and 65° 35′ lat. N. in the years 1898—1902.

By

C. Jensen.

1906.

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The mosses mentioned in this list were brought home from the following expeditions, viz:

Den danske Baadekspedition 1898—99,
Den svenske Ekspedition 1899,
Den danske Baadekspedition 1900,
Den danske Ekspedition 1901—1902.

The collectors are chiefly P. Dusén, N. Hartz and C. Kruuse. The mosses collected by P. Dusén have already been published in Öfversigt af Kongl. Vetensk.-Akad. Förhandlingar, 1900, no. 6 (Hepaticae) and in Bihang till K. Svenska Vet.-Akad. Handlingar, Band 27, Afd. III, no. 1 (Sphagna). The places where the mosses have been taken are:

	Lat. N.	Long W. of Grw.
Adloe	65° 31′	37° 5′
Akiliarisek	66° 18′	37° 35′
Amakâ (Kap Hörring)	65° 38′—39′	37° 34′
Anava	65° 36′	37° 10′
Bonteko Ö	73° 10′	
Bræfjord near Kap Wandel	66° 19′	
Canning Land	71° 45′	
Clavering Ö, Kap Mary	74° 10′	
Depot Ö	66° 7′	35° 31′
Elvbakker	65° 37′	37° 34′—40′
Eskimo Ö	66° 15′	35° 15′
Fleming Inlet	71° 40′	
Grönlænderpynt near Tasiusak	65° 37′	37° 33′
Hold with Hope	73° 30′	
Hurry Inlet	70° 51′	
Ikatek	65° 56′	36° 34′

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	Lat. N.	Long W. of Grw.
Ikerasausak	66° 0′—5′	37° 20′—30′
Ingmikertorajik	65° 54′	37°
Jærn Ö	65° 57′	35° 54′
Kaiser Franz Joseph Fjord	73° 30′—73° 10′	
Kajarsak	66° 49′	
Kakasuak near Kingorsuak	66° 5′—10′	37° 5′—15′
Kangerdluarsikajik	65° 57′	36° 10′
Kangerdlugsuatsiak	66° 16′—19′	35° 17′—27′
Kap Borlase Warren	74° 15′	
Kap Dalton	69° 25′	
Kap Franklin	73° 15′	
Kap Giesecke	74° 50′	
Kap Greg	70° 58′	
Kap Hildebrandt	66° 47′	
Kap Parry	72° 30′	
Kap Seaforth	71° 50′	
Kap Stewart	70° 25′	
Kap Wandel	66° 18′	34° 46′
Kap Warming	67° 1′—2′	
Kingorsuak	66° 5′—10′	37° 5′—15′
Kuarmiut	65° 52′	37° 35′
Langö (Ikerasarmiut)	67° 4′	
Lille Pendulum Ö	74° 30′	
Lille Ö	66° 58′	
Midtpynt n. Kangerdlugsuatsiak	66° 15′	35° 20′
Misutok	66° 0′	36° 58′
Nanertalik	66° 36′	
Nordfjord near Tasiusak	65° 37′	37° 33′
Nordostbugt	71° 17′	
Nordre Skerasak	65° 56′	
Norsit	65° 33′	37° 8′
Nualik	67° 16′	
Robertson Ö in Sofia Sund	73° 5′	
Ryders Dal in Hurry Indlet	70° 51′	
Röhss Fjord	72° 40′	
Sarfak	65° 55′	36° 15′
Sierak	65° 56′	37° 5′
Smalsund	65° 59′	35° 50′
Sten Ö	66° 3′	35° 31′

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	Lat. N.	Long W. of Grw.
Söndre Aputitek	67° 16′	
Tasiusak	65° 37′	37° 33′
Tasiusak near Kap G. Holm	66° 45′	
Tasiusarsik kidlek	65° 37′	37° 15′
Tasiusarsik in Angmagsalik Fjord	65° 47′	37° 4′
Tunok	65° 53′	36° 45′—50′
Turner Sund	69° 45′	
Turner Ö	69° 45′	
Utorkarmiut	65° 54′	36° 18′
Vahls Fjord	66° 22′	
Odesund	66° 10′	35° 23′

Fam. 1. Hepaticae.

1. **Marchantia polymorpha** L.

Tunok (Kruuse).

var. *alpestris* Nees.

Kap Seaforth in Fleming Inlet, on mew-hillocks, gonid. (Hartz); Ikerasausak, in Archangelicetum, ♂, gonid.; Sierak Dal, in herby slopes; Ingmikertorajik, fert.; Kuarmiut, gonid.; Amakâ, on river sides, gonid.; Elvbakker; Tasiusak (Kruuse).

This variety comes nearest to var. *mamillata* Hagen, from which it only disagrees in having few mamillae.

2. **Chomocarpon commutatus** (Lindenb.) Lindb.

Preissia commutata Nees.

Bonteko Ö, ster. (Dusén); Kap Seaforth, on the beach; Fleming Inlet Kingua; Nordostbugt, in bogs (Hartz); Kakasuak near Kingorsuak (Kruuse).

3. **Asterella pilosa** (Wahlenb.) Trevis.

Lille Pendulum Ö, fert.; Clavering Ö, Kap Mary, fert. (Dusén); Kakasuak near Kingorsuak, 420 mt. above the level of the sea, fert.; Kangerdluarsikajik, fert.; Tunok, fert.; Elvbakker, fert. (Kruuse).

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4. **Peltolepis grandis** Lindb.

Brædfjord near Kap Wandel; Kap Wandel; Akiliarisek, among *Salix arctica* (Kruuse).

5. **Sauteria alpina** (N. B.) Nees.

Kap Seaforth; Canning Land, fert. (Hartz).

6. **Clevea hyalina** (Somm.) Lindb.

Kap Franklin, fert. (Dusén).

7. **Odontoschisma Macounii** Aust.

O. tessellatum (Bergg.) C. Jens.

Clavering Ö, Kap Mary; Kap Franklin; Röhss Fjord; Hurry Inlet, on the field near Ryders Elv (Dusén, Kruuse); Turner Ö (Koch).

8. **Hygrobiella laxifolia** (Hook.) Spruce.

Jærn Ö (Kruuse).

9. **Cephalozia albescens** (Hook.) Kaal.

Pleuroclada albescens Spruce.

Hurry Inlet (Dusén); Smalsund; Jærn Ö (Kruuse).

var. *islandica* (Nees) Kaal.

Turner Sund (Hartz & Kruuse); Tunok; Ikerasausak, on heath; Tasiusak, in bogs at Nordfjord (Kruuse).

10. **Cephalozia bicuspidata** (L.) Dum.

Kap Parry; Hurry Inlet (Dusén); Kap Stewart (Hartz, Dusén); Turner Sund; Midtpynt at Kangerdlugsuatsiak; Ikerasausak; Jærn Ö (Kruuse).

var. *cavifolia* Arnell.

Fleming Inlet; Liverpool Kyst, southern part (Kruuse); Turner Sund (Hartz & Kruuse); Kap Dalton (Hartz); Nualik, Døde Hus Pynt; Kingorsuak, on sandy flats; Ikerasausak; Sierak Dal, on sandy flats; Ingmikertorajik (Kruuse).

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Everywhere in arctic regions this species has an inclination to get concave leaves, which are smaller and with shorter lobes. The colour is commonly more or less red-brown and dark, the leaf-cells and the cuticular-cells of the stem are shorter. There exists howewer a gradual transition between these forms and the main-species.

11. **Cephalozia media** Lindb.

Kap Parry (Dusén).

12. **Cephalozia pleniceps** (Aust.) Lindb.

Clavering Ö, Kap Mary, perianth. (Dusén); Hurry Inlet, near Ryders Elv, fert. (Kruuse); Turner Ö (Koch); Turner Sund, fert. (Hartz & Kruuse); Akiliarisek, among Salix arctica (Kruuse).

13. **Cephalozia divaricata** (Franc.) Dum.

Kap Giesecke; Lille Pendulum Ö; Clavering Ö, Kap Mary; Robertson Ö in Sofia Sund (Dusén); Nordostbugt, in bogs, ♀, gonid. (Hartz); Hurry Inlet, ♂ and ♀, (Dusén); Turner Ö (Koch); Turner Sund, partly forma *elongata*, (Kruuse); Kap Dalton (Hartz); Nualik, partly in a derelict Eskimo-house; Ingmikertorajik; Tunok, on sandy ground; Tasiusak (Kruuse).

var. *incurva* Lindb.

Nordostbugt (Hartz); Turner Sund; Depot Ö, in old tombs (Kruuse).

var. *grimsulana* (Jack) Kaal.

Hurry Inlet, Ryders Dal, perianth. (Kruuse).

This species varies in the same manner as *Cephalozia bicuspidata*, but apparently in still higher degree. Probably one or other undescribed species is hidden amongst all these more or less disagreeing forms.

14. **Cephalozia striatula** C. Jens.

Fleming Inlet (Hartz); Hurry Inlet, Ryders Dal (Kruuse); Turner Sund (Hartz & Kruuse).

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15. **Cephalozia asperifolia** C. Jens.

Hurry Inlet, Ryders Dal; Nualik, in a derelict Eskimo-house (Kruuse).

16. **Ptilidium ciliare** (L.) Nees.

Röhss Fjord (Dusén); Vahls Fjord; Ödesund; Jærn Ö; Tasiusak (Kruuse).

17. **Chandonanthus setiformis** (Ehrh.) Lindb.

Blepharostoma setiforme Lindb.

Vahls Fjord (Kruuse).

18. **Blepharostoma trichophyllum** (L.) Dum.

Kap Giesecke; Lille Pendulum Ö; Clavering Ö, Kap Mary; Kap Franklin; Röhss Fjord; Kap Parry (Dusén); Fleming Inlet (Hartz & Kruuse): Nordostbugt, in bogs (Hartz); Hurry Inlet, Ryders Dal (Dusén, Kruuse); Kap Stewart (Hartz, Dusén); Turner Sund (Hartz & Kruuse); Kap Dalton (Hartz); Midtpynt at Kangerdlugsuatsiak (Kruuse).

19. **Anthelia julacea** (L.) Dum.

Fleming Inlet; Nordostbugt, in bogs (Hartz); Hurry Inlet, Ryders Dal (Kruuse); Turner Sund (Hartz & Kruuse); Kingorsuak, on sandy flats; Ikerasausak, on sandy flats; Sierak Dal, on sandy flats; Kordlortok Sö; Elvbakker, in bogs; Grönlænderpynt at Tasiusak, on stony flats (Kruuse).

20. **Anthelia nivalis** (Sw.) Lindb.

Clavering Ö, Kap Mary; Röhss Fjord; Hurry Inlet (Dusén); Liverpool Kyst, southern part (Kruuse); Kap Stewart (Hartz, Dusén): Ikerasausak, partly in Archangelicetum, partly on damp grassy ground; Ingmikertorajik; Tasiusarsik in Angmagsalik Fjord (Kruuse).

21. **Martinellia Bartlingii** (Nees).

Martinellia Carestiae (D. N.) Lindb. ap. C. Jensen. Mosser fra Østgrønland, p. 376.

Hurry Inlet, Ryders Dal (Kruuse); Turner Ö (Koch); Tasiusak (Kruuse).

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22. **Martinellia subalpina** (Nees) Lindb.

Jærn Ö (Kruuse).

23. **Martinellia irrigua** (Nees) Lindb.

Tunok (Kruuse).

24. **Martinellia uliginosa** (Sw.) Lindb.

Jærn Ö (Kruuse).

25. **Martinellia curta** (Mart.) Lindb.

Depot Ö, in old tombs; Tasiusak (Kruuse).

26. **Martinellia rosacea** (Cord.) Lindb.

Hurry Inlet (Dusén); Elvbakker (Kruuse).

27. **Arnellia fennica** (Gottsch.) Lindb.

Southbya fennica Gottsch.

Kap Borlase Warren (Dusén, Hartz); Gaaseland in Scoresby Sund (Hartz) [1]).

28. **Aplozia sphaerocarpa** Dum. var. **lurida** (Dum.)

Jungermania nana Nees.

Nordostbugt, in bogs (Hartz); Hurry Inlet, Ryders Dal, perianth. (Kruuse).

29. **Jungermania quinquedentata** Huds.

Lille Pendulum Ö; Clavering Ö, Kap Mary; Kaiser Franz Joseph Fjord, *forma gracilis*; Röhss Fjord, partly *forma gracilis*; Kap Parry (Dusén); Fleming Inlet; Nordostbugt, in bogs (Hartz); Hurry Inlet, Ryders Dal (Dusén, Kruuse); Kap Stewart, *forma gracilis* (Dusén); Turner Ö (Koch); Turner Sund, partly *forma gracilis* (Hartz & Kruuse); Kap Dalton (Hartz); Lille Ö (Kruuse).

---

[1]) *Mylia Taylori* has not been found in East-Greenland, the very unimportant sample, referred by me in »Mosser fra Östgrönland» to this species, belongs to *Arnellia fennica*.

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var. *turgida* Lindb.

Hurry Inlet (Hartz, Dusén).

30. **Jungermania lycopodioides** Wall.

Tasiusak (Kruuse).

31. **Jungermania Floerkei** W. M.

Röhss Fjord (Dusén)[1]; Ödesund; Misutok; Ingmikertorajik; Tasiusak; Anava; Adloe (Kruuse).

32. **Jungermania Baueriana** Schiffn.

Lille Pendulum Ö (Dusén); Canning Land; Fleming Inlet (Gartz); Hurry Inlet (Dusén); Nualik; Bræfjord near Kap Wandel, partly *forma viridis* on the rhizome of *Cystopteris fragilis*; Akiliarisek, among *Salix arctica*; Depot Ö, partly in old tombs; Smalsund; Sarfak Pynt; Ingmikertorajik; Tasiusarsik in Angmagsalik Fjord; Adloe (Kruuse).

This species, described by V. Schiffner in „Lotos", 1903, no. 7, is widely distributed. A part of *Jungermania Floerkei* and of *J. lycopodioides* in the former moss-lists from Greenland certainly belong to *J. Baueriana*.

33. **Jungermania Binsteadii** Kaal.

Kaiser Franz Joseph Fjord; Röhss Fjord (Dusén).

I have had the opportunity of seeing this species in great quantities, during my stay in the Sarjek-Mountains in Lule-Lapmark. It is therefore of no doubt to me, that it is a proper species, which not at all is allied to *Jungermania quinquedentata*, but comes nearest to *Jungermania gracilis*.

34. **Jungermania quadriloba** Lindb.

Nordostbugt, in bogs (Hartz); Hurry Inlet (Dusén).

35. **Jungermania incisa** Schrad.

Kap Greg, creeping on compact *Sphagnum Girgensohnii* (Hartz).

---

[1]) The specimens from Lille Pendulum Ö and Hurry Inlet (Öfversigt af Kongl. Vetenskaps-Akademiens Förhandlingar, 1900, no. 6) belong to *J. Baueriana*.

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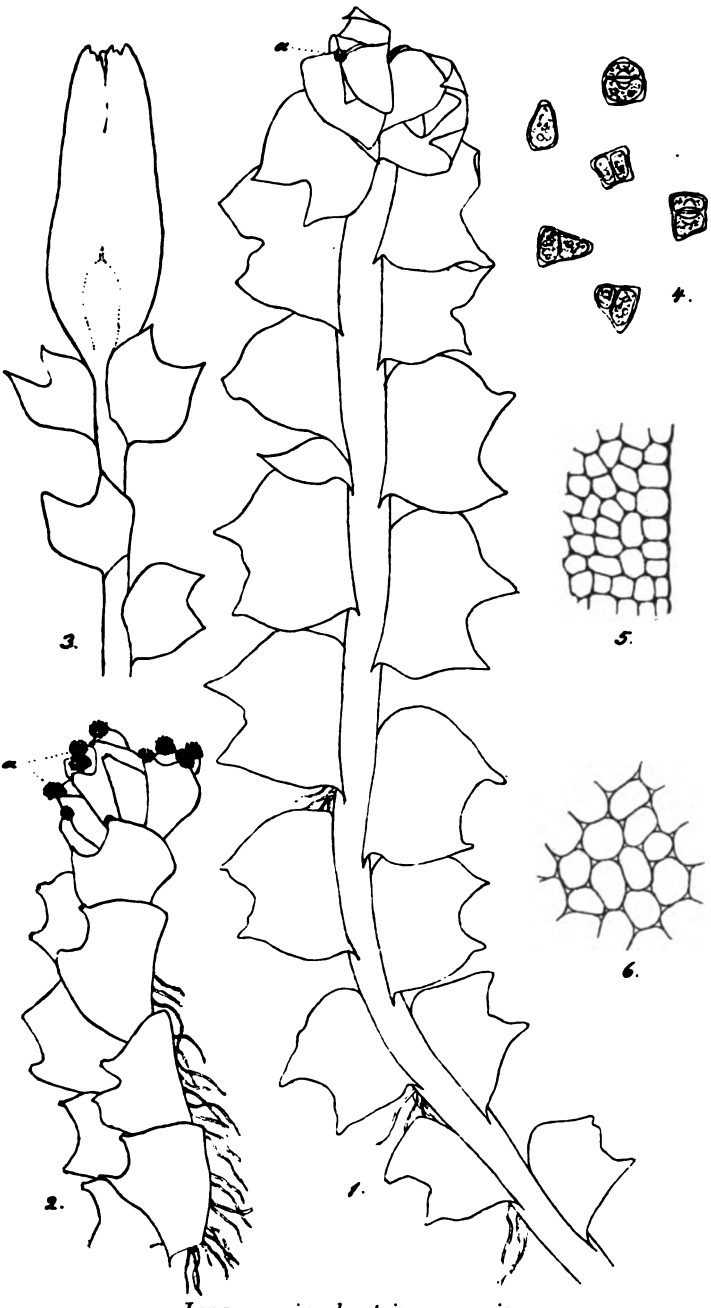

Jungermania alpestris var. *major*.

Fig. 1—2. Partes superiores plantarum gonidiliferarum, a. congregationes gonidiarum ($^{20}/_{1}$). **Fig. 3.** Pars superior plantae femineae cum perianthio ($^{20}/_{1}$). **Fig. 4.** Gonidia ($^{260}/_{1}$). **Fig. 5.** Textura cellularis limbi superioris folii ($^{116}/_{1}$). **Fig. 6.** Textura cellularis mediae folii ($^{116}/_{1}$).

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36. **Jungermania elongata** Lindb.

Fleming Inlet (Kruuse).

37. **Jungermania socia** Nees.

Röhss Fjord (Dusén); Turner Sund, perianth. (Hartz & Kruuse); Ingmikertorajik, gonid. (Kruuse).

38. **Jungermania alpestris** Schleich.

Röhss Fjord (Dusén); Fleming Inlet; Liverpool Kyst, southern part (Kruuse); Kap Stewart (Dusén); Turner Sund (Hartz & Kruuse); Kap Dalton (Hartz); Nualik, partly in a derelict Eskimo-house; Lille Ö; Kap Hildebrandt, eastside; Akiliarisek; Midtpynt at Kangerdlugsuatsiak; Ödesund; Kingorsuak, on sandy flats, f. *amphigastriata*; Ikerasausak, partly ♂ in Archangelicetum; Misutok; Smalsund; Ingmikertorajik, gonid.; Jærn Ö; Tasiusarsik in Angmagsalik Fjord; Nordfjord at Tasiusak, in bogs; Tasiusak (Kruuse).

var. *major*, v. nov.

Hurry Inlet, ♂ and ♀, gonid. (Dusén); Kap Brewster, gonid. (Hartz).

Amongst the numerous forms of this species one form occurs twice as large, usually of green colour and with larger leaf-cells. I have called it *Jungermania alpestris α latior* Nees[1]). Arnell asserts that the *α latior* Nees is *Jungermania Wenzelii* Nees, I therefore prefer to call this strong form var. *major*.

39. **Jungermania Wenzelii** Nees.

Tasiusak (Kruuse).

40. **Jungermania globulifera** n. sp.

Dioica, cæspites humiles et laxos formans, rufescens, perpusilla, pro parte in substrato occulta; caulis erectus vel suberectus, ad 8 mm. longus et 0·26 mm. latus, simplex vel ramosus, mediocriter fragilis, postice sat dense radicellifer; cellulis corticis rectangulis, tenui- et rufescente membranatis. Folia ad 0·42 mm. longa et 0·65 mm.

[1]) Öfversigt af K. Vetensk.-Akad. Förhandlingar, 1900, no. 6, p. 800.

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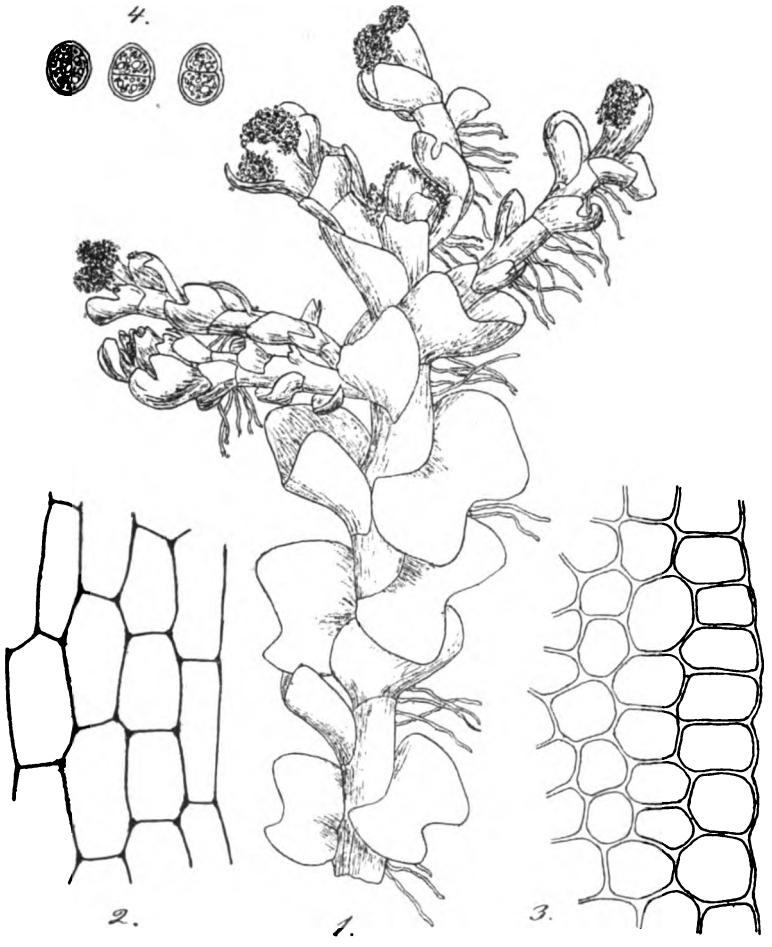
lata, caule duplo latiore, mollia, tenuia, sat remote dissita, patentia, oblique affixa, ad anticum vergentia, non decurrentia, vel in antico paullulum decurrentia, rotundate rectangularia, bilobata; incisura $^1/_3$—$^1/_2$, lata, obtusa, interdum modice gibba, lobis ovatis, obtusis



Jungermania globulifera C. Jensen.

Fig. 1. Planta sterilis gonidiifera ($^{30}/_1$). Fig. 2. Cellulae corticalis ($^{380}/_1$). Fig. 3. Cellulae folii ex margine lobi ($^{380}/_1$). Fig. 4. Gonidia ($^{380}/_1$).

vel rotundatis, æquimagnis vel inæquimagnis (lobus posticus sæpissime major), sæpe conniventibus. Cellulae foliorum sat parvae

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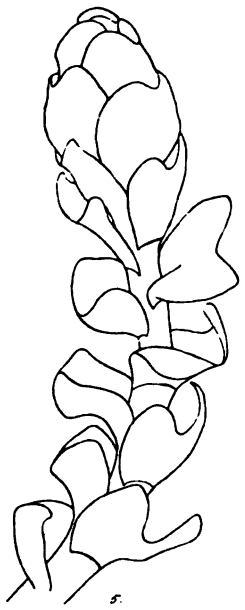
(loborum 0·02—0·026 mm. in diametro), fere æquimagnae, rotundate-quadratae, modice chlorophylliferae, pellucidae, membranis rufescentibus, sat tenuibus, ad angulos non vel leniter incrassatis; cuticula laevis.



Jungermania globulifera C. Jensen. Planta mascula (22/1).

Foliola nulla. Flores ♀ et fructus desunt. Planta ♂ parum minor; androecium terminale, ovatum; bracteae foliis majores, latissimae et valde concavae, dense imbricatae; incisura brevis, obtusa, lobis rotundatis, æquimagnis; antheridia 2 in axilla. Gonidia globosa — ovalia, uni — bicellularia, nunquam incrassata et angulata, 0·017—0·019 mm. lata et 0·019—0·022 mm. longa, rufa, anosiora brunnea, in apicibus foliorum congregationes formantia.

Ab *Jungermania alpestri* distinguenda cellulis foliorum tenui-membranatis, lobis obtusis—rotundatis, gonidiis globuliformibus, non incrassato—angulatis, non cornutis.

Habitat in solo arenaceo ad Kingorsuak et Sierak Dal, ♂ (Kruuse), sociis *Bryis*, *Pohliis*, *Polytrichis*, *Anthelia julacea*, *Cephalozia bicuspidata* var. *cavifolia*.

41. **Jungermania ventricosa** Dicks.

Hurry Inlet, Ryders Dal (Kruuse); Turner Sund, perianth. (Hartz & Kruuse); Ikerasausak, on heaths, perianth. and gonid.; Kap Hildebrandt, the eastside; Tasiusak near Kap G. Holm; Ingmikertorajik; Elvbakker; Tasiusarsik in Angmagsalik Fjord; Tasiusarsik (Kruuse).

var. *porphyroleuca* (Nees).

Röhss Fjord (Dusén); Ingmikertorajik (Kruuse).

The forms by me referred to *"porphyroleuca"* are all without perianth, I therefore have been unable to decide certainly whether they belong to Schiffners *Lophozia porphyroleuca* ("Lotos" 1903, no. 7). By this reason I prefer to call them "variety" of *Jungermania ventricosa*.

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42. **Jungermania Mülleri** Nees.

Röhss Fjord; Hurry Inlet (Dusén).

43. **Jungermania Homschuchiana** Nees.

J. Mülleri Nees, var. bantryensis (Hook.) Lindb.

Hurry Inlet, perianth. (Dusén).

44. **Jungermania heterocolpa** Thed.

Nordostbugt, in bogs (Hartz); Hurry Inlet, gonid. (Dusén).

45. **Jungermania inflata** Huds.

Hurry Inlet, Ryders Dal; Smalsund (Kruuse).

46. **Jungermania Kunzeana** Hub.

Kap Dalton (Hartz); Ingmikertorajik; Tunok; Tasiusak (Kruuse).

47. **Jungermania groenlandica** Nees.

Hurry Inlet, ♂ (Dusén).

48. **Jungermania polita** Nees.

Nordostbugt, in bogs (Hartz).

49. **Jungermania minuta** Cranz.

Lille Pendulum Ö; Kaiser Franz Joseph Fjord; Röhss Fjord; Kap Parry, fert.; Hurry Inlet (Dusén); Turner Sund; Ingmikertorajik; Tasiusak (Kruuse).

50. **Nardia obovata** (Nees) Carr.

Jungermania obovata Nees. Southbya obovata Lindb.

Jærn O; Elvbakker, in a well-like hole, wherein a rile disappears (Kruuse).

51. **Nardia scalaris** (Schrad.) Gr.

Alicularia scalaris Corda.

Jærn Ö (Kruuse).

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52. **Nardia minor** (Limpr.) Arn.

Alicularia minor Limpr., Nardia haematosticta (Nees) Lindb. Turner Ö (Koch).

53. **Marsupella aquatica** (Lindb.) Schiffn. var. **gracilis** v. n.

Gracilis, elongata, atrata, remotifolia, cellulis foliorum minoribus.

Habitat ad Tasiusak, in fundo aquulae ad 2—6 mt. profundae inundata (Kruuse).

54. **Marsupella groenlandica** C. Jens.

Hurry Inlet, Ryders Dal (Kruuse).

55. **Marsupella condensata** (Ångstr.) Arn.

Gymnomitrium condensatum Ångstr.

Tasiusarsik in Angmagsalik Fjord, ♂ (Kruuse).

56. **Marsupella apiculata** Schiffn.

Kordlortok Sö (Kruuse).

57. **Cesia revoluta** (Nees) Lindb.

Sarcoscyphus revolutus Nees.

Hurry Inlet (Dusén).

58. **Cesia corallioides** (Nees) Carruth.

Gymnomitrium corallioides Nees.

Hold with Hope; Robertson Ö in Sofia Sund; Röhss Fjord; Kap Parry; Kap Stewart (Dusén); Jærn Ö; Tasiusak (Kruuse).

59. **Cesia concinnata** (Lightf.) Gr.

Gymnomitrium concinnatum Corda.

Robertson Ö in Sofia Sund; Röhss Fjord; Kap Parry (Dusén); Turner Sund, ♀ (Kruuse); Kap Dalton (Hartz); Jærn Ö; Tasiusak (Kruuse).

60. **Prasanthus suecicus** (Gottsch.) Lindb.

Gymnomitrium suecicum Gottsche.

Turner Sund, fert. (Hartz).

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61. **Riccardia pinguis** (L.) Gr.

Aneura pinguis Dum.

Kap Giesecke; Kap Borlase Warren; Clavering Ö, Kap Mary (Dusén).

Fam. 2. Sphagnales.

62. **Sphagnum inundatum** Russ.

S. subsecundum Nees, var. inundatum (Russ.) C. Jens.

Hurry Inlet; f. *ano-drepanoclada* (Dusén).

63. **Sphagnum squarrosum** Crome.

Hold with Hope, f. *subimbricata, ano-dasyclada* (Dusén).

64. **Sphagnum teres** (Schimp.) Ångstr.

Nordostbugt, in bogs (Hartz); Midtpynt at Kangerdlugsuatsiak, f. *orthoclada*; Kingorsuak, the westside, f. *anoclada*; Jærn Ö, f. *squarrosula*; Kangerdluarsikajik; Tunok, f. *ano-dasyclada*; Kuarmiut, f. *spuarrosula*; Tasiusarsik in Angmagsalik Fjord, f. *anoclada*; Amakâ, on the border of a pond; Tasiusak; Adloe, f. *anodasyclada* and f. *dasyclada, viridis* (Kruuse).

65. **Sphagnum fimbriatum** Wils.

Nordostbugt, in bogs (Hartz); Hurry Inlet, f. *anoclada* (Dusén); Kap Dalton, f. *orthoclada* (Kruuse).

66. **Sphagnum Girgensohnii** Russ.

Nordostbugt, f. *orthoclada*; Kap Greg, f. *anoclada* and f. *orthoclada* (Hartz); Hurry Inlet Kingua, f. *ano-* et *orthoclada*; Kap Dalton, f. *anoclada*; Akiliarisek, among *Salix arctica*, f. *anoclada*; Ikerasausak, on rills in the heath, f. *orthoclada*; Misutok, f. *anoclada* and f. *dasy-mastigoclada*; Tasiusarsik in Angmagsalik Fjord, f. *anoclada*; Anava; Tasiusak (Kruuse).

67. **Sphagnum Russowii** Warnst.

Tasiusak, f. *orthoclada, tenella* (K.).

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68. **Sphagnum Warnstorfii** Russ.

Nordostbugt, in bogs (Hartz); Nualik, f. *anoclada, pallescens*; Akiliarisek, among *Salix arctica*; Eskimo Ö, f. *ano-dasyclada, pallescens*; Ikerasausak, on rills in the heath; Misutok; Sarfak; Tunok, f. *mastigoclada, viridis*; Adloe, f. *anoclada* and f. *dasyclada, versicolor* (Kruuse).

69. **Sphagnum rubellum** Wils.

Kap Warming, f. *flavo-viridis*; Kangerdluarsikajik (Kruuse).

70. **Sphagnum acutifolium** Ehrh.

Hurry Inlet, f. *gracilis*, f. *ortho-dasyclada, pallescens*, f. *anoclada*, f. *orthoclada* and f. *ano-dasyclada* (Dusén).

71. **Sphagnum riparium** Ångstr.

Ikerasausak, f. *dasyclada*; Norsit; Tunok, f. *submersa*; Amakâ, on the border of a pond (Kruuse).

72. **Sphagnum balticum** Russ.

Hurry Inlet Kingua, f. *orthoclada* (Kruuse).

73. **Sphagnum cuspidatum** Ehrh. var. **Kruusei** v. n.

Gracilis, pallide-fuscescens. Caulis tenuis, tegumento corticali e triplici et quadruplici strato cellularum formato, cellulis sat magnis, strato lignoso fusco; folia caulina triangulari-lingulata, sat magna, in parte superiore fibrosa et porosa, vel triangulari-ovata, ad basim fibrosa, in hac re folia ramulina subsimilia; limbo marginali inferne dilatato. Folia ramulina e basi ovata longe acuta, subsecunda, poris ut in formis emersis *Sphagni cuspidati* typici; cellulae chlorophylliferae trigono-ovatae, in latere concavo folii subliberae. Flores et fructus desunt.

Habitat ad Tasiusak (Kruuse).

Sphagnum cuspidatum was not hitherto recorded from Greenland. The here described form disagrees from the main-species by the brown wood-cylinder. Perhaps a proper species? The sample is very small.

28—11—1906.

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Indhold.

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IX.

List

of the Andreaeales and Bryales found in East-Greenland between 74° 15′ and 65° 35′ lat. N. in the years 1898—1902.

By

Aug. Hesselbo.

1907.

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The mosses mentioned in the following list were collected by C. Kruuse and N. Hartz during the following expeditions:

Den danske Baadexpedition 1898—99.
- — — 1900.
Den danske Expedition 1901—02.

The Sphagnales and Hepaticae collected at the same expeditions have been determinated by C. Jensen, who also had determinated some of the Bryales when I recieved the collections.

Lists of the situation of the localities have been published by C. Jensen: List of the Hepaticae and Sphagnales found in East-Greenland, and C. Kruuse: List of Phanerogames and Vascular-Kryptogames appearing in the Angmagsalik District. (Medd. om Grønland vol. XXX, pag. 213—14 and 297—99).

The mosses, which have not hitherto been found in Greenland have been marked with *.

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1. Polytrichum commune L.

Kap Greg mixed up in tufts of *Sphagnum Girgensohnii*, and with *Ceratodon purpureus* and *Hypnum aduncum* (forma *integerrima*) (N. Hartz). Elvbakker, Tasiusak st.[1]); Amaka on the border of a pond among *Spagnum riparium* st. (Kruuse).

2. Polytrichum juniperinum Willd.

Kuarmiut st.; Skærgaardshalvøen st.; Skerasak st.; Hurry Inlet st.; Turner Sund in tufts of *Sphaerocephalus palustris* st.; Tasiusak st.; Krotodok st.; Narsik cfr.[2]) (Kruuse) Kap Borlase Warren st. among *Ceratodon purpureus* (Hartz).

3. Polytrichum strictum Banks.

Ingmikertorajik cfr., partly mixed with *Dicranum elongatum*; Ødesund st. among *Dicranum fuscescens*; Tasiusak cfr. among *Sphaerocephalus turgidus* and *Dicranum elongatum*; Sarfak with *Sphagnum Warnstorffii* st. Turner Sund cfr. and ♂; Kap Dalton st.; Adloe Kap Dan st.; Depot Ø st.; Norsit ♂; Krotodok st. (Kruuse). Kap Borlase Warren st. (Hartz).

4. Polytrichum pilosum Neck.

Nualik, Døde Hus Pynt ♂; Adloe cfr.; Tunok cfr.; Ryders Dal cfr.; Jærnø ♂; Kingorsuak on sandy flats st. (Kruuse).

5. Polytrichum sexangulare Flörcke.

Turner Sund sparingly with *Jungermannia ventricosa* and *J. qvinqvidentata* cfr.; Misutok with *Jungermannia alpestris* st.; Kap Warming st.; Sabine Ø st.; Tasiusarsik in Angmagsalik Fjord with

---

[1]) st. = signifies sterile.

[2]) cfr. = signifies fruiting.

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Dicranum elongatum st.; Elvbakker, Tasiusak sparingly with *Pohlia gracilis*, *Bartramia ityphylla* and *Anthelia julacea* st. (Kruuse) Kap Dalton st. (N. Hartz).

6. Polytrichum alpinum L.

Kap Greg, partly in tufts in a length of c. 15 ctm., partly mixed with *Pohlia nutans* st.; Kap Brewster st. (Hartz); Ryders Dal st.; Anava, partly cfr.; Nualik, Døde Hus Pynt, more samples, partly cfr.; Eskimo Ø cfr.; Kunak Ø st.; Utorkarmiut st.; Depot Ø st.; Kingorsuak, the westside st.; Elvbakker, Tasiusak in Kolonibækken cfr.; Krotodok, Tasiusak st.; Falkefjord st.; Midtpynt near Kangerdlugsuatsiak st.

var. *septemtrionalis* (Sw.).

Søndre Aputitek st.; Tasiusak cfr. (Kruuse).

7. Polytrichum urnigerum L.

Kingorsuak, the westside, mixed up in tufts of *Hylocomium proliferum*, *Dicranum scoparium* and *Sphaerocephalus turgidus* st.; Kap Hillebrand st. (Kruuse).

*8. Schistophyllum osmundioides (Sw.) La Pyl.

var. *microcarpus* Br. eur.

Nordostbugt in bogs with *Meesea trichoides β minor*, *Swartzia montana*, *Blepharostoma trichophyllum* and other mosses st. (Hartz).

9. Astrophyllum hymenophylloides (Hüb.) Lindb.

Sabine Ø st. (Kruuse); Fleming Inlet st. (Hartz).

10. Astrophyllum cinclidioides (Blytt.) Lindb.

Falkefjord ♀; Amaka near Kordlortok on the border of a pond st.; Tunok in archangelicetum st. (Kruuse).

11. Astrophyllum medium (Br. eur.) Lindb.

var. *arcticum* C. Jensen.

Nordostbugt in bogs st.; Kap Seaforth on mew-hillocks st. (Hartz).

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12. **Astrophyllum orthorrhynchum** (Br. eur.) Lindb.

Fleming Inlet, sparingly among other mosses st. (Hartz); Kap Dalton st. (Kruuse).

13. **Timmia austriaca** Hedw.

Canning Ø st.; Sabine Ø st. (Kruuse); Kap Dalton st. (Hartz).

14. **Sphaerocephalus palustris** (L.) Neck.

Nordostbugt in bogst st.; Kap Seaforth on mew-hillocks st.; Kap Dalton st. (Hartz). Akiliarisek st.; Elvbakker st.; Ingmikertorajik st.; Turner Sund, several samples st.; Henry Ø, 840 m. above the level of the sea st.; Midtpynt near Kangerdlugsuatsiak st.; Ryders Dal st. (Kruuse).

15. **Sphaerocephalus turgidus** (Wahlb.) Lindb.

Kap Dalton, several samples st. (Hartz, Kruuse); Liverpool Kyst st.; Henry Ø, 840 m. above the level of the sea st.; Anava st.; Elvbakker st.; Krotodok st. (Kruuse); Nordostbugt in bogs st.; Jan Mayen st. (Hartz).

16. **Paludella squarrosa** (L.) Brid.

Falkefjord st.; Amaka near Kordlortok on the border of a pond st.; Elvbakker st. (Kruuse); Nordostbugt in bogs st. (Hartz).

17. **Meesea trichoides** (L.) Spruce.

var. *minor* (Brid.).

Nordostbugt in bogs st. (Hartz); Ryders Dal st. (Kruuse), in both places sparingly mixed up in tufts of other bog mosses.

18. **Philonotis fontana** (L.) Brid.

Ikerasausak in archangelicetum st.; Elvbakker, several samples st.; Ryders Dal ♂; Kangerdlugsuatsiak st.; Turner Sund st.; Ikatek ♂; Amaka on the border of a pond st.; Tasiusak ♀; Henry Ø 840 m. above the level of the sea st.; Tasiusarsik in Angmagsalik Fjord st.; Jærn Ø st.; Sabine Ø st.; Tunok st.; Ingmikertorajik st.; Kap Warming st. (C. Kruuse); Nordostbugt in bogs st.; Fleming Inlet st.; Kap Brown st.; Kap Borlase Warren st. (Hartz).

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19. Philonotis caespitosa Wils.

Tasiusak ♂; Kap Wandel cfr. and ♂ (Kruuse) (C. Jensen determ.).

20. Bartramia crispa Sw.

Kap Dalton cfr. (Hartz); Elvbakker cfr.; Turner Sund cfr. (Kruuse).

21. Bartramia ityphylla Brid.

Amaka, on the border of a pond cfr.; Elvbakker, in bogs st., and at Kolonibakken cfr.; Smalsund cfr.; Tasiusak cfr.; Lille Ø st.; Kap Wandel cfr.; Adloe st.; Narsik cfr.; Krotodok cfr. (Kruuse).

22. Conostomum tetragonum (Vill.) Sw.

Tunok cfr.; Vahls Fjord cfr.; Kingorsuak st.; Ikerasausak in the heath st.; Amaka st.; Tasiusak cfr.; Lille Ø st.; Nualik, Døde Hus Pynt st.; Turner Sund st. (Kruuse); Misutok cfr.

23. Bryum capillare (L.).

Kap Wandel st. (Kruuse).

24. Bryum elegans Nees.

Utorkarmiut st. (Kruuse).

25. Bryum neodamense Itzigs.

var. *ovatum* Jur.

Lille Ø st.; Ryders Dal st.; Tasiusarsik st. (Kruuse).

26. Bryum ventricosum Dicks.

Nordostbugt in bogs ♂; Kap Seaforth on mew-hilloks ♀ (forma *tenuis*, *brevifolia*) (Hartz); Amaka on the border of a pond st. (var. *duvalloides* Itz.); Tunok st. (forma *cavifolia*); Elvbakker st. (Kruuse).

27. Bryum argenteum L.

Falkefjord st. (Kruuse); Kap Greg st. (Hartz).

28. Bryum cirratum Horusch.

Turner Sund cfr.; Ryders Dal cfr.; Ikerasausak in archangelicetum cfr.; Kangerdluarsikajik cfr. (Kruuse); Kap Dalton cfr. (Hartz).

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29. Bryum obtusifolium Lindb.

Kap Borlase Warren among *Philonotis fontana* st.; Kap Greg st. (Hartz); Sabine Ø st.; Turner Sund st. (Kruuse).

30. Bryum teres Lindb.

Kap Borlase Warren st. (Hartz); Sierak st. (Kruuse).

31. Bryum purpurascens (R. Br.) Br. eur.

Kingorsuak on sandy flats cfr.; Ingmikertorajik Fugleholm cfr. (Kruuse).

32. Bryum arcticum (R. Br.) Br. eur.

Sabine Ø cfr. (Kruuse).

33. Bryum pendulum (Horusch) Sch.

Kap Brewster cfr.; Kap Borlase Warren cfr. (Hartz).

var. *compactum* (Hornsch.) Sch.

Kap Borlase Warren cfr. (Hartz).

34. Bryum archangelicum Br. eur.

Turner Sund cfr.; Ryders Dal cfr. (Kruuse).

35. Bryum inclinatum (Sw.) Blandow.

Ikerasausak in archangelicetum cfr.; Sierak cfr.; Tasiusak cfr. (Kruuse); Kap Dalton cfr. (Hartz).

36. Plagiobryum Zierii (Dicks.) Lindb.

Canning Ø st. (Kruuse).

37. Pohlia albicans (Wahlb.) Lindb.

Tasiusak st.; Ingmikertorajik st.; Ikerasausak in archangelicetum st. (Kruuse).

var. *glacialis* Schleich.

Kap Tobias st.; Amaka on the border of a pond st.; Liverpool Kyst st.; Elvbakker st. (Kruuse).

38. Pohlia commutata (Schimp.) Lindb.

Turner Sund: several sterile tufts, partly mixed with other mosses; Kangerdlugsuatsiak st.; Jærn Ø cfr.; Tasiusak st.; Tasiusarsik

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in Angmagsalik Fjord st.; Ryders Dal st.; Smalsund ♀; Nualik st. (Kruuse); Nordostbugt in bogs ♂ and cfr.; Kap Brewster st. (Hartz).

var. *filum*.

Nualik st. under Snebræen; Misutok st.; Kingak Angmagsivik in heat st. (Kruuse); Kap Warming st. (Hartz).

39. Pohlia gracilis (Schleich.).

Jameson Land st.; Kap Greg st. with *Ceratodon purpureus*; Nordostbugt in bogs st. among other mosses (Hartz); Elvbakker st.; Ingmikertorajik st. with *Amblystegium aduncum*, and in bogs; Tunok st.; Kingorsuak on sandy flats st.; Kap Dalton among other mosser st. and ♂; Sierak Dal on sandy flats st.; Bræfjord near Kap Wandel st.; Henry Ø 840 m. above the level of the sea st.; Fleming Inlet st.; Akiliarisek st.; Tasiusak st. in a rill (Kruuse).

40. Pohlia proligera Lindb.

Depot Ø in an old tomb. ♀; Turner Sund st. (Kruuse); Kap Greg st. (Hartz).

41. Pohlia nutans (Schreb.) Lindb.

Turner Sund, several samples cfr.; Kap Warming cfr.; Nualik, Døde Hus, more samples, partly cfr.; Ingmikertorajik cfr. and Ingmikertorajik Fugleholm cfr.; Nordre Skerasek cfr.; Søndre Aputitek cfr.; Anava st.; Depot Ø st.; Tasiusak cfr.; Hurry Inlet cfr.; Kap Wandel cfr.; Adloe st.; Sabine Ø st. (Kruuse); Kap Greg cfr. (Hartz); Sierak cfr. (Kruuse).

* var. *strangulata* (Nees) Schimp.

Lille Ø cfr. (Kruuse).

var. *sphagnetorum* Schimp.

Turner Sund cfr. in tufts of *Sphaerocephalus palustris* (Kruuse); Nordostbugt in bogs with *Sphagnum* (Hartz).

42. Pohlia rutilans (Br. eur.) Lindb. (C. Jensen det.).

Anava cfr. (Kruuse).

43. Pohlia cucullata (Schwgr.) Lindb.

Elvbakker st. mixed with *Polytrichum commune* and *Bartramia crispa*; Tasiusak cfr.; Ingmikertorajik in large tufts cfr. (Kruuse).

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44. Pohlia crassidens Kindb.

Hurry Inlet, Ryders Dal st. (Kruuse).

45. Pohlia Ludwigii (Spreng.) Lindb.

Kap Greg st. among *Ceratodon purpureus* (Hartz).

46. Pohlia cruda (L.) Lindb.

Nordostbugt in bogs st.; Kap Borlase Warren st.; Kap Brewster st. (Hartz); Elvbakker, more tufts, partly cfr.; Kap Wandel st.; Bræfjord near Kap Wandel st.; Turner Sund st.; Kap Dalton cfr.; Sabine Ø st.; Nualik, Døde Hus Pynt st.; Henry Ø 840 m. above the level of the sea st.; Depot Ø st., more samples; Anava st.; Ingmikertorajik st.; Akiliarisek st.; Kap Brown st.; Midtpynt near Kangerdlugsuatsiak st.; Krotodok st.; Kakasuak near Kingorsuak st. in herby sloaps; Falkefjord st. (Kruuse).

var. *minus* Sch.

Nordostbugt in bogs st. (Hartz); Tasiusak in bogs with *Comarum* st. (Kruuse).

47. Leptobryum pyriforme (L.) Wills.

Kap Borlase Warren cfr.; Kap Seaforth on new-hillocks among *Sphaerocephalus palustris* st. (Hartz); Ingmikertorajik Fugleholm mixed with *Tortula latifolia* st. (Kruuse).

*48. Tayloria serrata (Hedw.) Br. eur. var. pallida nov. var.

Peristomium valde hygroscopicum, exsiccatum erecto-intricatum, humidum valde spiraliformiter involutum, ad basin in dentes 32 fere hyalinas fissum. Sporæ glabro, 0·014—0·017 mm. Gemmulæ absunt.

Kap Borlase Warren (Hartz).

49. Leersia spathulata (C. M.) Lindb.

Sabine Ø cfr. (Kruuse); Jan Mayen cfr. among Stereodon revolutus and Barbula rubella (Hartz).

50. Leersia affinis (Hedw.) Lindb.

Fleming Inlet st. (Kruuse).

51. Tortula ruralis (L.) Ehrb.

Kap Borlase Warren st. (Hartz); Falkefjord st.; Ryders Dal st.; Misutok st.; Eskimo Ø st.; Depot Ø st.; Anava st.; Kap Brown

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st.; Kap Dalton st.; Turner Sund st.; Elvbakker st.; Ingmikertorajik st.; Tasiusak st. (Kruuse).

52. **Tortula norvegica** (Web.-f.) Wahlenberg.

Kap Borlase Warren st. (Hartz).

53. **Tortula latifolia** (Hedw.) Lindb.

Kakasuak near Kingorsuak cfr.; Ingmikertorajik Fugleholm cfr.; Tasiusak cfr.; Kap Warming st.; Nordre Skerasak st.; Elvbakker cfr.; Utorkarmiut cfr.; Falkefjord cfr.; Ingmikertorajik cfr.; Kap Dalton cfr.; Hurry Inlet cfr. (var. *encalyptratus* (Lindb.)) (Kruuse).

β. muticus Brid.

Depot Ø st.; Jærn Ø st. (Kruuse).

54. **Mollia tortuosa** (L.) Schrank.

Midtpynt near Kangerdlugsuatsiak st. (Kruuse).

55. **Barbula rubella** (Hofm.) Mittm.

Kap Borlase Warren cfr.; Jan Mayen cfr. (Hartz).

56. **Dicranum fuscescens** Turn.

Ingmikertorajik st.; Pynt i Ødesund st.; Jærn Ø st.; Misutok st.; Akiliarisek st. among *Salix arctica* (Kruuse).

var. *tenella* C. Jensen.

Elvbakker st.; Ikerasarmiut st. (Kruuse).

*57. **Dicranum montanum** (Hedw.) C. Jensen det.

Kunak Ø, a little sterile tuft (Kruuse).

58. **Dicranum elongatum** Schleich.

Ingmikertorajik st. among *Sphaerocephalus palustris*, *Polytrichum strictum* and *Jungermannia minuta*; Elvbakker st.; Amaka on the border of a pond st.; Tasiusak st.; Krotodok st. (Kruuse).

59. **Dicranum congestum** Brid.

Pynt i Ødesund st.; Ryders Dal st.; Turner Sund st.; Henry Ø 840 m. above the level of the sea st.; Krotodok st. (Kruuse); Kap Borlase Warren st. (Hartz).

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var. *spadiceum* (Zett.) C. Jensen det.

Krotodok st. (Kruuse).

60. Dicranum angustum Lindb.

Nordostbugt in bogs sparingly in tufts of *Amblystegium polygamum*, *Hypnum trichoides*, *Oncophorus Wahlenbergii* and other mosses (Hartz).

61. Dicranum Bonjeani De Not. f. orthophylla.

Adloe Kap Dan st. (Kruuse).

62. Dicranum scoparium (L.) Hedw.

Midtpynt near Kangerdlugsuatsiak st.; Kingorsuak on the west-side st.; Ingmikertorajik Fugleholm st.; Kap Wandel st. (var. *paludosum* Sch. forma *orthophylla*); Misutok st. (forma *brevifolia orthophylla*); Krotodok st. (Kruuse); Ingmikertorajik st. (forma *brevifolia orthophylla*) (Kruuse).

63. Dicranum neglectum Jur.

Turner Sund st. more samples; Ryders Dal st.; Elvbakker in bogs st. (Kruuse).

64. Dicranum Mühlenbeckii Br. eur.

Ingmikertorajik st.; Ingmikertorajik Fugleholm st. among *Dicranum elongatum* and *Polytrichum strictum*. Akiliarisek among *Salix arctica* st. (Kruuse).

65. Dicranum molle Wils.

Amaka on river sides st.; Adloe st.; Elvbakker cfr.; Ødesund st.; Ikerasausak in the heath st.; Nordfjord near Tasiusak in bogs cfr.; Krotodok st.

66. Dicranum Starckei W. M.

Lille Ø st.; Tasiusak st.; Amaka on river sides cfr.; Tasiusak Misutok with *Scirpus caespitosus* st. (Kruuse).

67. Dicranum Schisti (Gunn.).

Nualik st.; Krotodok st.; Ødesund st. (Kruuse).

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***68. Dicranoweissia cirrata** (L.) Lindb.

Ingmikertorajik cfr. (Kruuse).

69. Dicranowussia crispula (Hedw.) Lindb.

Kap Dalton cfr.; Fleming Inlet cfr. (Hartz); Søndre Aputitek st. (Kruuse).

70. Dicranoweissia compacta (Schleich) Schnup.

Falkefjord cfr.; Ingmikertorajik Fugleholm cfr. (Kruuse).

71. Blindia acuta (Huds.) Br. eur.

Sarfakajik st. (Kruuse).

72. Swartzia montana (Lam.) Ehrb.

Kap Borlase Warren cfr. (forma *brevifolia*); Fleming Inlet st. (ex parte var. *stricta*); Nordostbugt in bogs cfr.; Kap Dalton st.; Jan Mayen st. (Hartz) Ryders Dal st.; Tasiusak (forma *brevifolia stricta*); Turner Sund several samples, partly cfr.; Kangerdlugsuatsiak cfr.; Sabine Ø cfr.; Midtpynt near Kangerdlugsuatsiak cfr. (Kruuse).

73. Ditrichum flexicaule (Schleich.) Hampe.

Nordostbugt in bogs st. (Hartz); Sabine Ø st.; Turner Sund st.; Ryders Dal st. (Kruuse).

***74. Ditrichum zonatum** (Brid.) Limpr.

Kingorsuak on sandy flats st. (Kruuse).

75. Oncophorus Wahlenbergii Brid.

Kap Dalton st.; Nordostbugt in bogs (forma *elata, sqvarrosa* c. fol. subdenticulata) st. (Hartz); Kingorsuak, the westside st. (Kruuse).

76. Oncophorus virens (Sw.) Brid.

Falkefjord cfr. (Kruuse).

77. Oncophorus strumifer (Ehrb.) Brid.

Krotodok cfr. (Kruuse).

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78. Oncophorus polycarpon (Ehrh.) Brid.

Canning Ø st.; Sarfak Pynt st. (Kruuse).

79. Oncophorus torquescens (Bruch.) Lindb.

Krotodok cfr.

80. Ceratodon purpureus (L.) Brid.

Kap Borlase Warren st.; Kap Greg (forma *brevifolia viridis*) st.; Jan Mayen st. (Hartz); Tunok st.; Ryders Dal cfr.; Tasiusak st.; Adloe st.; Dunholm (f. *brevifolia*) st.; Kap Warming st.; Anava st.; Ikerasarmiut st.; Ingmikertorajik st. (f. *brevifolia*); Henry Ø 840 m. above the level of the sea st.; Lille Ø cfr.; Kap Dalton st.; Misutok st.; Isi in the Sermilik Fjord cfr.; Ingmikertorajik Fugleholm st. (Kruuse).

81. Dorcadion Killiasii (C. M.) Lindb. (C. Jensen det.).

Kap Dalton cfr. (Kruuse).

82. Dorcadion Blyttii (Schimp.) Lindb.

Falkefjord cfr. (Kruuse).

83. Grimmia ericoides (Schrad.) Lindb.

Adloe st. (Kruuse).

var. *epilosa* H. Müll.

Turner Sund st. (Kruuse).

84. Grimmia hypnoides (L.) Lindb.

Elvbakker, in bogs st.; Amaka on the border of a pond st.; Lille Ø st.; Sun Ø st.; Kangerjiks Ø st.; Wahls Fjord st.; Ødesund st.; Jærnø st.; Henry Ø st.; Falkefjord st.; Krotodok st. (Kruuse); Jan Mayen st.; Fleming Inlet st. (Hartz).

85. Grimmia fascicularis (Schrad.) C. M.

Jærn Ø st.; Sarfakajik in herby sloaps with *Carex pulla* (forma *atrata*) st.

86. Grimmia alpestris Schleich.

Nualik, Døde Hus Pynt cfr. (Kruuse).

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87. Grimmia mollis Br. eur.

Kap Warming st. (Kruuse).

88. Grimmia apocarpa (L.) Hedw.

Canning Ø cfr. Kap Brown cfr. (Kruuse).

89. Grimmia gracilis Schleich.

Jan Mayen cfr. (forma *nigra*) (Hartz).

90. Grimmia alpicola Sw. (C. Jensen det.).

Falkefjord st. (Kruuse).

***91. Sekra minor** (L.) Adans. (C. Jensen det).

Amaka on the border of a pond mixed with *Amblystegium pseudostramineum* st. (Kruuse).

92. Andreaea petrophila Ehrh.

Nualik, several tufts, partly cfr.; Ødesund st.; Kap Hillebrandt cfr.; Jærn Ø st.; Kap Warming st.; Lille Ø st.; Krotodok cfr.; Falkefjord cfr. (Kruuse).

***93. Amblystegium Juratzkanum** Sch.?

Kap Borlase Warren st., very sparingly mixed up in a tuft of *Tayloria serrata* var. *pallida*. The sample is too little for an exact determination.

94. Amblystegium protensum (Brid.) Lindb.

Kap Wandel st. (Kruuse); Nordostbugt in bogs st. (Hartz).

95. Amblystegium stellatum (Schreb.) Lindb.

Nordostbugt in bogs with *Amblystegium Sendtneri*, *A. aduncum* etc. st.; Kap Borlase Warren st. (Hartz). Hurry Inlet st.; Misutok with *Scirpus caespitosa* st. (Kruuse).

96. Amblystegium polygamum Br. eur.

Nordostbugt in bogs with *Hypnum trichoides*, *Oncophorus Wahlenbergii* etc. st.; Kap Dalton st. (Hartz).

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97. Amblystegium Sendtneri (Schimp.) Lindb.

Nordostbugt in bogs with *A. turgescens, A. revolvens, A. sarmentosum* etc. cfr. (Hartz). Ryders Dal (var. *vulgaris* Sanio) st. (Kruuse).

98. Amblystegium Cossoni (Schimp.) Lindb.

Nordostbugt in bogs st. (Hartz).

99. Amblystegium revolvens (Sw.) De Not.

Nordostbugt in bogs with other species of *Amblystegium* st. (Hartz).

100. Amblystegium vernicosum Lindb.

Nordostbugt in bogs with jung capsules (Hartz).

101. Amblystegium aduncum (L.) Lindb.

Ødesund st.; Kap Dan st.; Anava st.; Ingmikertorajik st.; Ingmikertorajik Fugleholm st.; Sten Ø st.; Depot Ø (f. *viridis gracilis*) st.; Kingorsuak cfr. (f. *gracilis*); Turner Sund, several samples st.; Kap Wandel st.; Amaka st.; Akiliarisek st.; Tasiusak st.; Tasiusarsik in Angmagsalik Fjord st. (var. *major*); Kunak Ø st.; Misutok st.; Krotodok st. (Kruuse); Nordostbugt in bogs st.; Kap Greg st.; Fleming Inlet st. (Hartz).

var. *orthothicioides* Lindb.

Kap Seaforth on new-hilloks cfr. (Hartz).

102. Amblystegium exannulatum (Br. eur.) De Not.

Liverpool Kyst, southern part st.; Amaka on the border of a pond with Juncus st.; Ikerasausak (f. *ortho-brachyphylla*) st.; Tasiusak (f. *orthophylla*) st.; Ingmikertok (f. *orthophylla*) st.; Ikerasausak st.; Grønlænderpynt st. (Kruuse).

103. Amblystegium tundrae Arnell ex. p.

Syn: **Drepanocladus tundrae** Loeske in: Zweiter Nachtrag zur Moosflora des Harzes (Verh. des Bot. Vereins der Prov. Brandenburgs XLVI pag. 194).

Amaka on the border of a pond with Juncus st.; Elvbakker in bogs st. (Kruuse).

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104. Amblystegium fluitans (L.) De Not.

Nordostbugt in bogs st. (N. Hartz).

105. Amblystegium purpurascens (Schimp.).

Sieralik on sandy flats st.; Depot Ø with *A. sarmenlosum* st.; Jærn Ø st.; Elvbakker st.; Tasiusak st. on sandy flats, among *Sphagnum Girgensohnii*; Ikerasausak in rills in the heath st. (Kruuse).

106. Amblystegium Berggrenii C. Jensen.

Ikerasausak among *Sphagnum riparium* (Kruuse).

***107. Amblystegium pseudostramineum** (C. M.) Lindb.

Amaka on the border of a pond st. (Kruuse).

108. Amblystegium Kneiffii Br. eur.

Kap Borlase Warren (f. *brevifolia orthophylla*) st. (Hartz).

109. Amblystegium polycarpon (Bland.).

Kap Borlase Warren (Hartz). Isi in Sermilik Fjord in ponds with *Alopecurus geniculatus* (forma *simplex*) st. (Kruuse).

110. Amblystegium brevifolium Arnell.

Ryders Dal st. (Kruuse).

111. Amblystegium badium (Hartm.) Lindb.

Adloe st. (Kruuse).

112. Amblystegium scorpioides (L.) Lindb.

Ryders Dal, Vargudden, with *A. sarmentosum*, *Stereodon chryseus* and *Ditrichum flexicaule* st. (Kruuse).

113. Amblystegium turgescens (Jensen) Lindb.

Nordostbugt in bogs among other bogmosses (*Harpidium*, *Bryum ventricosum*) st. (Hartz). Liverpool Kyst, partly mixed with *Ambl. Sendtneri*, *Paludella squarrosa* etc. st.; Ryders Dal with *Ambl. Sendtneri* st. (Kruuse).

114. Amblystegium giganteum (Sch.) De Not.

Sabine Ø st. (Kruuse).

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115. Amblystegium cordifolium (Hedw.) De Not.

Nordostbugt in bogs with *Paludella sqvarrosa* and other mosses st.; Kap Dalton st. (Hartz).

116. Amblystegium sarmentosum (Will.) De Not.

Nordostbugt in bogs st. (Hartz); Turner Sund st.; Ryders Dal st.; Kap Dalton st.; Jærn Ø st.; Adloe st.; Ødesund st.; Nualik st. (Kruuse).

117. Amblystegium stramineum (Dicks) De Not.

Nordostbugt in bogs among *Paludella sqvarrosa* st. (Hartz). Eskimo Ø st.; Adloe, Kap Dan st. with *Sphagnum Girgensohnii*; Anava st.; Falkefjord among *Paludella* st.; Tasiusak with *Polytrichum juniperinum* st.; Ingmikertorajik st.; Ingmikertorajik Fugleholm st.; Ikerasausak among *Sphagnum Girgensohnii* st.; Kordlortok Sø on the border st.; Kuarmiut among *Sphagnum teres* st. (Kruuse).

118. Amblystegium trifarium (W. M.) De Not.

Nordostbugt in bogs (Hartz).

119. Hypnum reflexum Starke.

Ingmikertorajik cfr.; Akiliarisek among *Salix arctica* st. (Kruuse).

120. Hypnum Mildei (Schimp.).

Nordostbugt in bogs st. (Hartz).

121. Hypnum plumosum Huds.

Ryders Dal among *Sphaerocephalus palustris* st.; Sabine Ø st. (Kruuse).

122. Hypnum turgidum Hartmann.

Turner Sund st.; Sabine Ø st. (Kruuse); Kap Seaforth on mew-hilloks st. (Kruuse).

123. Hypnum albicans Neck.

Kap Wandel st. (Kruuse).

***124. Hypnum erythrorrhizon** (Br. eur.) Hartmann.

Ingmikertorajik st. (Kruuse).

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125. Hypnum trichoides Neck.

Nordostbugt in bogs st.; Kap Dalton st. (Hartz); Kap Brown st.; Kingorsuak, the westside, among *Sphagnum teres* st. (Kruuse).

***126. Lesquereuxia filamentosa** (Dichs.) Lindb.
var. **brachyclados** (Schwäg.) (C. Jensen det.).

Ingmikertorajik ♂; Tasiusarsik in Angmagsalik Fjord ♀ (Kruuse).

127. Myurella tenerrima Brid.

Tasiusak among *Swartzia montana* st.; Misutok at *Woodsia ilvensis* among *Swartzia montana* st. (Kruuse).

128. Myurella julacea (Will.) Br. eur.

Sabine Ø among *Swartzia* st.; Kangerdluarsuatsiak among *Swartzia* st.; Ryders Dal among *Sphaerocephalus palustris*, *Polytrichum alpinum* and *Bryum ventricosum* st. (Kruuse); Jan Mayen among *Leersia spathulata* st.; Fleming Inlet among *Leersia affinis* st. (Hartz).

129. Hylocomium proliferum (L.) Br. eur.

Kap Wandel st.; Kingorsuak, the westside st. (Kruuse).

***130. Campylium hispidulum** (Brid.) Mitten.

Turner Sund in tufts of *Dicranum neglectum* st. (Kruuse).

131. Stereodon revolutus Mitten.

Kap Borlase Warren st.; Jan Mayen st. (Hartz); Kap Dalton, several samples, st. (Hartz, Kruuse); Turner Sund st.; Ikerasarmiut st.; Ryders Dal st. (Kruuse).

132. Stereodon chryseus (Schwägs.) Mitt.

Sabine Ø st.; Turner Sund st.; Ryders Dal, Vargudden st. (Kruuse).

***133. Stereodon rufescens** (Dicks.) Mitten.

Kap Wandel among Bartramia ityphylla st. (Kruuse); Kap Borlase Warren sparingly in tufts of *Tayloria serrata* var. *pallida*.

134. Isopterygium pratense (Br. eur.) Lindb.

Kap Seaforth on mew-hillocks st. (Hartz).

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135. Isopterygium nitidum (Wahlb.) Lindb.
var. **pulchellum** (Dicks.).

Fleming Inlet st. (Hartz); Turner Sund st.; Ryders Dal st.; Henry Ø 840 m. above the level of the sea st.; Krotodok st. (Kruuse).

136. Plagiothecium denticulatum (L.) Br. eur.

Turner Sund st. (Kruuse).

* var. **Donii** (Sm.).

Kingorsuak, in the great thicket of Salix st. (Kruuse).

137. Climacium dendroides (L.) W. M.

Kakasuak near Kingorsuak among *Thalictrum* st. (Kruuse).

28—8—1907.

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X.

The vegetation of Northeast Greenland

69° 25′ lat. n.—75° lat. n.

by

N. Hartz and Chr. Kruuse.

1911.

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During the Danish expedition to East Greenland 1900, under the charge of G. Amdrup, we investigated the flora and vegetation of the tracts of land visited by the expedition.

The route followed by the expedition has been mentioned by N. Hartz in "Medd. om Grønl." vol. XXVII. List of discovered phanerogams and vascular cryptogams is furnished by Chr. Kruuse in "Medd. om Grønl." vol. XXX, in which volume is made mention also of the algae, mosses, fungi and lichens collected by us.

Sabine Island (N. Hartz.)

July 11th—12th. The "Antarctic" was riding at anchors in Griper Roads southwest of the extreme point of the cape where the ruins of the German observatory were still to be seen. Across the low tongue of land and across low, flat ground I went towards WNW, away to the big stream which borders Hasenberg towards the east; the stream and the whole of the cleft through which it runs, were as yet for a great deal hidden under huge snow-drifts; here and there the stream had however burst through the ice- and snowcover; at such places steep snow walls bordered its course.

Animal life was rather rich; in the course of this day's march I saw 3 musk-oxen [1]), 3 hares, one hen-ptarmigan with a numerous hatch of chickens, numbers of snow-sparrows, a

[1]) In the stomach of a shot musk-ox were found by washing of the exceedingly evil-smelling contents of the stomach abt. 99 p. cent of leaves and small branches of *Salix arctica*; besides single leaves of *Luzula*, gramineous plants, *Dryas* and fragments of *Stereocaulon*.

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few ravens, and excrements of foxes and a great many tracks of lemmings; a great many insects were seen visiting the flowers.

In the low ground by Germania Harbour were found enormous numbers of *Papaver radicatum*[1]; it was now in full flower and so luxuriant as hardly anywhere else in Greenland; one big tuft near the beach bore — beside a number of capsules from 1899 — a young fruit from 1900, 38 fully developped, large flowers and 34 big, black-haired buds. At the summit of Hasenberg grew comparatively many white-flowered poppies, many white-flowered specimens being seen as well on moist ground near the harbour.

On the numerous decumbent little bushes of *Salix arctica* on the slopes of the stream was seen beautiful wind-erosion[2]; the predominant wind in the valley is the northwind, in the direction of the valley.

A special character was given to the vegetation by the occurrence of divers northern species, such as *Saxifraga flagellaris* and *hirculus*; the first mentioned being particularly frequent; *Polemonium humile* with its large vividly coloured flowers is known to belong to the rare constituents of the Greenland-flora; it was common here, partly on the dry, naked basalt-plateaus, partly in humid cracks where, on humus, it formed big, luxuriant, flowery "mats".

Taken as a whole it was the ordinary, northern insular vegetation: In the hollows *Carex*-bogs, moss-bogs or combined moss-*Carex*-bogs; on the dry mountain slopes rocky-flat formation[3] more or less luxuriant all in proportion to exposition, mouldformation etc. Considerable continuous tracts of heath-moor-land we did not see in the island.

[1] We are using the same plant names as in Chr. Kruuse's above quoted paper (Medd. om Grønl., XXX).

[2] cp. truncs from Scoresby Sund mentioned and pictured by Hartz Medd. om Grønland, XVIII, p. 310.

[3] Eug. Warming's "Fjældmark" (fell-field).

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Sabine Island (Chr. Kruuse).

On the strand round Germania Harbour was found a rather broad zone of a strand-flora consisting of: *Carex glareosa, C. salina v. subspathacea, Glyceria vilfoidea, Halianthus peploides, Stellaria humifusa, Cochlearia officinalis v. groenlandica* and *Armeria vulgaris v. sibirica.*

Behind (north of) the harbour is a small bog, or rather a river-bed with very flat bottom and gentle inclination. Here were noted:

Ranunculus pygmæus, R. hyperboreus, Saxifraga rivularis, S. nivalis f. tenuis, Koenigia islandica, Juncus biglumis, Eriophorum Scheuchzeri, E. polystachium, Carex lagopina, Alopecurus alpinus.

Between the phanerogams and along the margin of the bog the following mosses were coverforming:

Polytrichum sexangulare, Astrophyllum hymenophylloides, Timmia austriaca, Philonotis fontana, Bryum obtusifolium, B. arcticum, Pohlia nutans, Leersia spathulata, Ditrichum flexicaule, Amblystegium giganteum, Hypnum turgidum, Myurella julacea, Schwartzia montana and *Stereodon chryseus.*

Contiguous to this bog was a sharp-cut, V-shaped, streamlet-cleft, on the sandy sides of which were noted:

Chamænerium latifolium, Draba alpina, Cardamine bellidifolia, Ranunculus pygmæus, Saxifraga cernua, S. decipiens, S. stellaris f. comosa, S. oppositifolia v. pulvinata, Juncus biglumis, Luzula confusa, Festuca ovina, Poa abbreviata and *Equisetum arvense.* The tufts, which were but few cm apart, were all large and richly flowering.

In the valley itself, between the Hasenberg and the Germaniaberg, and up the low foot of the latter the loose soils consisted of red, sanded clay strown with loose, abt. 10 cm large blocks. Both the clay and the blocks originate with the basalt which forms the rocks of the island. On the foot of the mountain lie many large snowdrifts, from which the meltingwater oozes down and steeps the ground to a soft,

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soaked, sliding mud; only farther down towards the bottom of the valley does it collect in brooks which have cut in the gravel stony beds which drain the localities. Round them the bottom is stone-hard, dry as a bone and often scarred by cracks forming a diagonal net. The vegetation of the valley was rocky-flat formation with wide intervals between the vascular plants. Cryptogams were almost totally wanting.

The side of the Germaniaberg consists partly of steep basalt crags, which are totally devoid of vegetation at their bases; uppermost on the talus the plants of the rocky-flat formation collect to a dense cover with a height of from 5 to 10 cm, the main part of which is formed by gramineous species, *Alsine biflora* and *Potentillas*. Denser and more pronounced the herby-slope appears, however, on the edges of step-shaped ledges east of Germania Harbour. It is chiefly made up of *Salix arctica, Vaccinium uliginosum v., Campanula uniflora, Polygonum viviparum, Carex rupestris* and *Poa cenisia.*

The cover is complete, 5—10 cm high and fresh-green. Between the named species are found interspersed in lesser numbers the following vascular plants: *Potentilla nivea, P. maculata, P. emarginata, Stellaria longipes, Draba Fladnizensis, Saxifraga hirculus, S. decipiens, Cassiope tetragona, Pedicularis flammea, Gentiana tenella, Taraxacum phymatocarpum, Erigeron uniflorus, Salix herbacea, Oxyria digyna, Elyna Bellardi, Trisetum, Alopecurus alpinus, Equisetum variegatum f. anceps, E. arvense, Cystopteris fragilis, Woodsia ilvensis* and *Lycopodium Selago f. appressa.*

On the flat summit of the Germaniaberg the earth in the depressions is often covered with boulders with a diameter of 30—40 cm, which form a depressed mesh-plexus. Their dark coatings of dessicated algæ and horizontal stripes of clay show that they are covered by water a certain time of the year; in the spaces between them are found the largest associations of *Polemonium*, which often forms patches of 2 m².

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The plants of the rocky-flat formation were as follows:

Dryas octopetala f. argentea.
— — *f. minor.*
Potentilla pulchella f. humilis
— *maculata.*
— *nivea.*
Melandrium apetalum.
— *involucratum v. affine.*
Silene acaulis.
Sagina nivalis.
Alsine biflora.
— *verna v. rubella.*
Arenaria ciliata v. humifusa.
Stellaria longipes.
Cerastium alpinum.
Draba alpina.
— *nivalis.*
— *Fladnizensis.*
— *hirta.*
— *arctica.*
Cardamine bellidifolia.
Ranunculus glacialis.
— *nivalis.*
— *altaicus.*
— *arcticus.*
Saxifraga stellaris v. comosa.
Alopecurus alpinus.
Trisetum subspicatum.
Dupontia Fisheri.
Arctagrostis latifolia.
Hierochloa alpina.
Aira cæspitosa v. alpina.
Poa glauca.
Saxifraga cernua.
— *decipiens.*
— *hirculus.*
— *oppositifolia.*
— *flagellaris v. setigera.*
— *nivalis.*
Papaver radicatum.
Armeria vulgaris v. sibirica.
Pedicularis hirsuta.
Cassiope tetragona.
Empetrum nigrum.
Vaccinium uliginosum v. microphyllum.
Polemonium humile.
Erigeron compositus.
— *uniflorus v. pulchellus.*
Arnica alpina.
Taraxacum phymatocarpum.
Polygonum viviparum.
Luzula confusa.
— *arctica.*
Elyna Bellardi.
Carex capillaris.
— *misandra.*
— *nardina.*
— *rupestris.*
Poa abbreviata.
Festuca ovina.
Woodsia ilvensis.
Equisetum variegatum.
— — *f. anceps.*
— *arvense.*

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Cape Borlase Warren (N. Hartz).

July 14th. The next place in which we landed was abt. 1 km. to the north of Cape Borlase Warren; we did not stay but 3 hs. here.

Inside a low sea-margin, made up of gneiss-blocks, was found a small lagoon with fresh water, originating from a snow-drift close to the beach. The sea nevertheless once in a while sets into the lagoon, a circumstance of which numerous *Laminaria*-leaves and sea-mussels in the water bore witness.

Animal life in the lagoon was rich and swarming; great swarms of *Apus glacialis* were stirring the mud on the bottom[1]); brown *Daphniae* and countless gnatworms were rooting the bottom or swimming in the water; on mosses in the water was seen a rich *Chlorophyllaceae*-vegetation.

On the inside of the lagoon (western side) was found a narrow green fringe made up of *Glyceria vilfoidea*, sprinkled with flowering *Stellaria humifusa*, some few *Cochleariae, Carex ursina* (largely cropped by geese), *Ranunculus hyperboreus* (partly with floating leaves, now in flower), *Phippsia algida* and *Koenigia* — besides numerous mosses. The whole of the vegetation along the lagoon had a white salt-covering; numerous excrements of geese were scattered everywhere on the beach; in the fat, moist marshy ground and in the half moulded geese-excrements were found quantities of small worms. The humus-layer along the inside of the lagoon appeared by the very wrinkles of its surface to be made up mostly of excrements of geese, a quite characteristic form of mould met with again later on in many places frequented by the geese.

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[1]) The grey colour of *Apus* completely matches the grey mire at the bottom of the lagoon; the animal was hardly discernible when lying quietly on the bottom. Now and then a solitary *Apus* might be seen swimming on its back and with its mouth in the very surface of the water searching and skimming this latter most carefully; every single air-bubble on the surface was thoroughly investigated.

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The water in the lagoon was quite tepid close to the beach where the current from the little brook did not reach. At 5^{30} p. m. were read the following temperatures:

Temperature of the air (swing thermometer), fog, sun hardly breaking through ..... + 1° C.
Temperature of the water, 5 cm depth, ball reposing on cover of *Chlorophyllaceae* ..... + 14,5° C.
Temperature of water, 14 cm depth, ball on mud-bottom ..... + 13° C.

At an Esquimaux-ruin near the beach was found the usual vegetation of *Alopecurus alpinus* on the thick mould-layer. In the vicinity of the ruin was seen a magnificent growth of *Polemonium humile*, whole, large, unmixed "beds" of almost one m^2 size. Here also was found a very big decumbent *Salix arctica*, the foliage of which covered abt. 10 m^2.

Vascular plants from Sabine Island and Cape Borlase Warren.

Dryas octopetala.
Potentilla pulchella f. humilis.
— *emarginata.*
— *nivea.*
— *maculata.*
Chamænerium latifolium.
Empetrum nigrum.
Silene acaulis.
Melandrium involucratum v.
— *apetalum.*
— *triflorum.*
Sagina nivalis.
— *cæspitosa.*
Alsine biflora.
Alsine verna v. rubella.
Halianthus peploides.
Arenaria ciliata v. humifusa.
Stellaria humifusa.
— *longipes.*
Cerastium alpinum.
Cochlearia officinalis f. minor.
Draba alpina.
— *nivalis.*
— *Fladnizensis.*
— *hirta*
— *arctica.*
— *glacialis.*
Braya purpurascens.

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Cardamine bellidifolia.
Papaver radicatum.
Ranunculus glacialis.
— *pygmæus.*
— *hyperboreus.*
— *nivalis.*
— *altaicus.*
— *arcticus.*
Saxifraga nivalis.
— *stellaris v. comosa.*
— *cernua.*
— *rivularis.*
— *decipiens.*
— *hirculus.*
— *flagellaris v. setigera.*
— *oppositifolia.*
Armeria vulgaris var.
Pedicularis flammea.
— *hirsuta.*
Polemonium humile.
Gentiana tenella.
Cassiope tetragona.
Rhododendron lapponicum.
Vaccinium uliginosum v.
Campanula uniflora.
Taraxacum phymatocarpum.
Erigeron uniflorus.
— *compositus.*
Arnica alpina.
Koenigia islandica.
Polygonum viviparum.
Oxyria digyna.
Salix arctica.
— *herbacea.*
Juncus biglumis.
Juncus triglumis.
Luzula confusa.
— *nivalis.*
Eriophorum Scheuchzeri.
— *polystachium.*
Elyna Bellardi.
Carex nardina.
— *lagopina.*
— *ursina.*
— *misandra.*
— *glareosa.*
— *salina f.*
— *rupestris.*
— *incurva.*
Alopecurus alpinus.
Hierochloa alpina.
Aira cæspitosa f.
Trisetum subspicatum.
Dupontia Fisheri.
Phippsia algida.
Arctagrostis latifolia.
Glyceria vilfoidea.
Poa abbreviata.
— *glauca.*
— *alpina.*
— *cenisia.*
Festuca ovina.
— *rubra.*
Lycopodium Selago.
Cystopteris fragilis.
Woodsia ilvensis.
Equisetum variegatum.
— — *f. anceps.*
— *arvense.*

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Cape Dalton (N. Hartz).

July 18—21th. In the lee of (south of) Cap Dalton is a considerable lagoon, cut off from the open sea by a low, black, barren sea-margin, which in the northernmost part reaches abt. 4 m above the sealevel.

In the northern part of the lagoon the winter-ice was still solid; in the shallow water near the margin was found here a peculiar *Fucus inflatus* var. *membranacea*; a quantity of drift-wood had been washed ashore.

The rocks here were basalt. Here, as everywhere on the outer coast it was a very conspicuous fact that the vegetation doesn't reach a passably luxuriant development till at a hundred or a few hundred metres above the the sea level; and not only is the vegetation more vigorous at this elevation, it was also far more advanced in development than the vegetation of the low-land. Thus e. g. *Pedicularis hirsuta*, which in the lowland was not even fully blown, had shed its flowers at a height of a few hundred metres; *Cassiope tetragona* was flowering much more richly up here than farther down. The cold mist, which often settles on the lowland, assuredly acts highly cowing and hin-dering upon the vegetation down here along the coast. On one of the days while we were staying here the temperature of the air in the lowland, where the fog reigned and a cold wind blew, was $\div 2°$ C., while a few hundred metres further up, above the fogbank, it showed $+ 10°$ C.; up here the weather was calm, and the sun was shining while the fog was still enveloping the lowland.

While the vegetation was extremely poor in the lowland it was surprisingly luxuriant when you got a few hundred m mountainwards. On moist, mould-covered, partly densely moss-grown, terrace-shaped ledges in abt. 200 m height above the level of the sea were noted: Numerous vigorous tufts of *Sedum Rhodiola* (all pure male or female plants, no herma-

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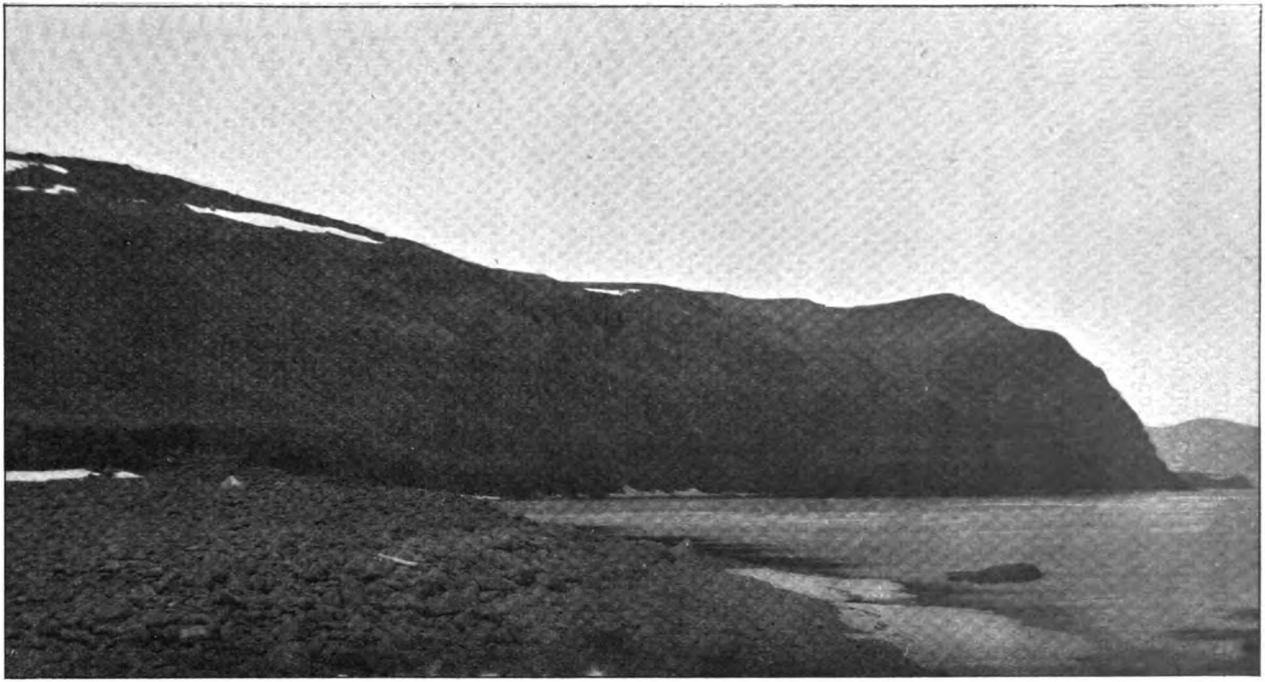

Fig. 1. The large basaltwall at Cape Dalton. In the fore-ground the stony bare strand-wall outside the lagoon. (From photo. by Chr. Kruuse).

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phroditic plants), *Thalictrum, Potentilla maculata, Draba crassifolia, Oxyria, Erigeron uniflorus, Salix arctica, Carex rigida* (in great numbers). A great many winter-nests and other traces of lemmings were found.

Abt. 250 m above sea level: Large *Cassiope hypnoides* and *C. tetragona* in full flower. The air smelt sweet from the white corollas of *Cassiope tetragona*, which were industriously visited by humble-bees.

Abt. 330 m above sea level: On the solid basalt *Usnea melaxantha* was very common. Here a rich insect-life had developped: *Argynnis*, wasps and *Syrphidae*, besides numerous dancing gnatworms.

Large, dense cushions of *Arctostaphylos alpina* covered the field, which here consisted of débris of basalt; this species was not seen farther down the mountain.

At this height were noted besides: *Potentilla nivea, Saxifraga tricuspidata* and *S. oppositifolia, Dryas octopetala, Carex nardina, Pedicularis hirsuta, Cerastium alpinum, Polygonum viviparum, Ranunculus arcticus* with its var. *Wilanderi, Arnica alpina.*

This latter evidently turned its big yellow flowers after the sun; all its flowers stood clearly oriented after the direction of the sun.

Cape Dalton (Chr. Kruuse).

The lowland surrounding the lagoon, as well as the littoral region, was totally devoid of vegetation. The north side of the valley is formed by a steep basaltwall, which out in the bay ducks its foot directly in the sea, whereas landwards it is covered by débris consisting of coarse, sharp-edged blocks. In many places the snowcoating is still thick, and the débris is devoid of vegetation except in the few places where a little basalt-rock sticks out and thus forces the water to the surface. Here were noted tufts of *Cassiope tetragona,* some crumpled individuals of *Salix arctica, Polygonum,* an isolated *Ranunculus*

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glacialis, and some small tufts of *Tortula ruralis*; but no coherent vegetation. Above the débris the mountain ascends in broad steps towards the east. On the lower steps the snow still lies in most places metrehigh, and wherever it has melted the bottom is a mire of clay, upon which is rarely seen a *Grimmia*-tuft, and still more seldom, only in the lee of stones, some few specimens of *Luzula confusa*, *Saxifraga stellaris* v. *comosa*, *S. nivalis* v. *tenuior*, *Ranunculus glacialis* and *Oxyria*. All here is still thaw and early spring, but even later in the year this cold bottom will house but a very sparse vegetation.

Higher up the steps become more snowless and are covered by moorland-soil, and here the steep slopes between them, wherever is abundant, equally distributed moisture, become densely covered, and if anywhere in the localities a small depression is found, the sides of which protect against wind and weather, one may meet with a veritable herby slope with dense, complete and fresh-green cover of a height of 10—15 cm, formed by:

Sibbaldia, *Silene acaulis*, *Alsine biflora*, *Cerastium alpinum*, *C. trigynum*, *Melandrium apetalum*, *Draba alpina*, *D. crassifolia*, *D. Fladnizensis*, *Cardamine bellidifolia*, *Arabis alpina*, *Thalictrum alpinum*, *Saxifraga nivalis*, *S. rivularis*, *Sedum Rhodiola*, *Veronica alpina*, *Taraxacum croceum*, *Antennaria alpina* v. *glabrata*, *Salix herbacea*, *S. glauca*, *S. arctica*, *Polygonum*, *Oxyria*, *Koenigia*, *Luzula spicata*, *Carex rariflora*, *C. scirpoidea*, *C. rigida*, *Trisetum*, *Poa pratensis*, *P. cenisia*, *Cystopteris* and *Equisetum arvense*.

The horizontal flats upon the steps, especially when facing the steeply descending margin, were very moist and covered with extensive flat moss-bogs formed by:

Polytrichum strictum, *Sphaerocephalus turgidus*, *Bartramia crispa*, *Bryum capillare*, *Pohlia gracilis*, *P. cruda*, *Tortula ruralis*, *Dicranoweissia crispula*, *Ceratodon purpureus*, *Dorcadion Killiasii*, *Amblystegium polygamum*, *A. cordifolium*, *A. sarmen-*

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tosum, Stereodon revolutus, Cephalozia bicuspidata v. cavifolia, C. divaricata, Blepharostoma trichophyllum, Jungermannia quinquedentata, J. alpestris, J. Kunzeana, Cesia concinnata and *Sphagnum fimbriatum* f. *orthoclada.*

Widely distributed in the moss-cover grew: *Ranunculus pygmæus, R. nivalis, R. hyperboreus, Saxifraga stellaris* v. *comosa, Salix arctica, Koenigia, Luzula confusa, Eriophorum Scheuchzeri, Carex rariflora, C. scirpoidea, Poa pratensis* and *Phippsia algida.*

On the inner parts of the step-flats, and in spots where the margin was convex the humidity was present in far lesser quantities and localized in brooks. Here was found luxuriant heather-moor consisting of:

Cassiope tetragona, Vaccinium, Empetrum, Stellaria longipes, Draba hirta, D. nivalis, Saxifraga tricuspidata, Pedicularis hirsuta, Pyrola grandiflora, Campanula rotundifolia, Antennaria alpina, Carex nardina, C. rupestris and *Woodsia ilvensis.*

Between the high-mountain of Cape Dalton and the mountains behind is found a low mountain range, which the weathering has covered with sand and gravel and strown with broken stones and concretions. It was very dry, without snow and watercourses, and bore a very sparse rocky-flat formation consisting of *Dryas octopetala* v. *minor, Alsine biflora, Silene acaulis, Erigeron uniflorus, Luzula confusa, Carex nardina, Trisetum* and *Poa glauca.* At one place, where some small, weathered crags protruded, a little above the gravel was one, abt. 1 metre long, bush of *Arctostaphylos alpina,* and at another spot one half as big specimen of *Saxifraga tricuspidata,* but elsewhere coherent plant-cover was wanting totally, and there were several metres between the separate tufts.

Up the side of the mountain to the west of this area, the vegetation was a far more luxuriant rocky-flat formation formed by: *Potentilla maculata, P. nivea, Silene, Alsine verna, Cerastium alpinum, Arenaria ciliata, Pedicularis lapponica, P.*

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flammea, P. hirsuta, Papaver radicatum, Arctostaphylos, alpina Campanula rotundifolia, Saxifraga decipiens, Arnica alpina, Luzula confusa, L. spicata, Poa glauca, Trisetum, Festuca ovina, Equisetum variegatum and *Cystopteris.*

Turner Sund.

22—28 July. Owing to the ship's taking the ground in Turner Sund, as mentioned by Hartz in his account of the voyage (Medd. om Grønland, XXVII, p. 160) our stay in this place was somewhat longer than intended. Our investigations were all conducted in the Turner Island, at the narrowest spot of the straits, or in the neighbourhood of the island.

A quantity of drift-timber lay washed ashore, partly tall, slim conifers, partly foliage-trees (birch?). A number of loose bits of bark of pine and birch were also seen. One of the trunks of the conifers bore plain marks of the axe. Also a quantity of *Fucus* had drifted ashore; but the sublittoral region and the shallows vere totally bare of algae; on deeper water the algal vegetation was, on the contrary, rich.

A special strand-vegetation was almost totally wanting here; it was represented solely by isolated specimens of *Glyceria vilfoidea, Stellaria humifusa* and *Cochlearia officinalis v. groenlandica* f. *minor.*

On shore were seen traces of reindeer and wolf, numerous lemmings, some ermines; a number of bears were killed under our sojourn here [1]).

Turner Sund (Chr. Kruuse).

The surface of the cape was slightly undulating, covered by coarse gravel and strown with large erratic boulders. The

[1]) The stomach contents of a shot bear appeared to consist largely of leaves of *Oxyria digyna*, evidently the food which the bear has sought ashore; casual ingredients of the stomach contents: a little grass, a few leaves of *Polygonum viviparum, Saxifraga cernua, Sax. cæspitosa, Polytrichum* sp.

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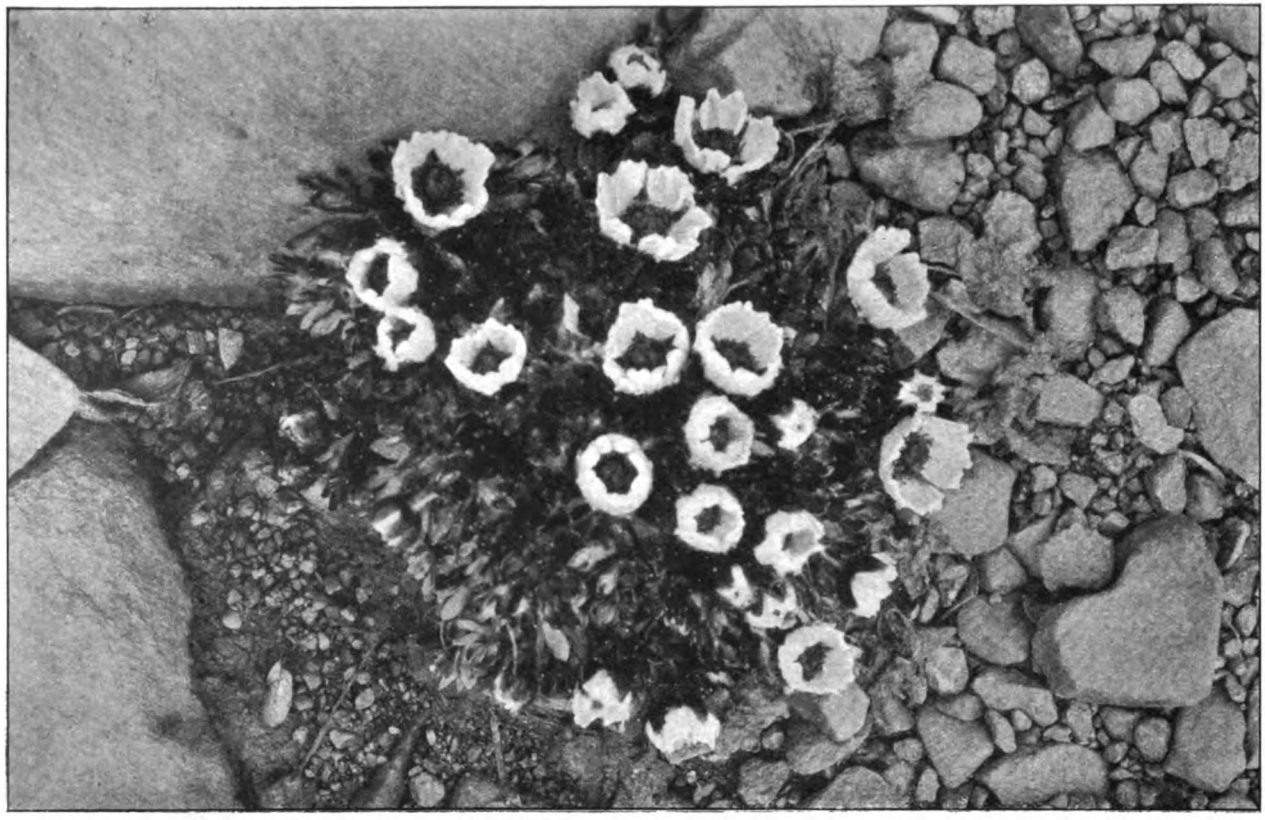

Fig. 2. *Ranunculus glacialis*, ²/₃ nat. size, phot. Chr. Kruuse.
Gravelly bottom, Turner Sund, the cape. 27. 7. 00. *R. glacialis* was one of the few bigger phanerogams which rose above the gravel here; but this too sought shelter behind rocks (see these to the left in the figure).

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depressions were almost bare of vegetation on account of the long standing snow-covering and the too great humidity. The low, flat summits of the elevated lines were covered by a scanty carpet of *Anthelia* together with scattered tufts of *Grimmia ericoides* and, at large intervals, some single phanerogams more or less influenced by the north wind, which is predominant here. More conspicuous was *Ranunculus glacialis*, which was in full bloom (Fig. 2). The flowers are marked sunflowers turning their corollas after the place of the sun in the sky. The flowers were white, as a rule; we saw, however, several reddish corols. Together with *Ranunculus glacialis* were found a few dwarf specimens of *Cochlearia officinalis v. groenlandica* f. *minor*, *Sagina nivalis*, *Silene acaulis*, *Potentilla maculata*, *Polygonum viviparum*, *Salix herbacea*, *S. arctica*, *Phippsia*, *Luzula confusa*, *Saxifraga decipiens* and *S. rivularis*.

A little more to the westward, by the points of a little bay opposite to the cape, I ascended a 700 m high mountain (exposition SSE.). The beach and the low foreland consisted of basalt gravel, was ploughed by wild brooks, and was covered by very poor rocky-flat formation, chiefly formed by mosses, especially *Anthelia julacea*, which covered large moist patches. Of other mosses were collected here:

Polytrichum strictum, *Philonotis fontana*, *Bartramia crispa*, *Conostomum tetragonum*, *Bryum cirratum*, *B. archangelicum*, *Pohlia commutata*, *P. proligera*, *P. nutans* and *v. sphagnetorum*, *Sphaerocephalus turgidus*, *P. cruda*, *Tortula ruralis*, *Dicranum neglectum*, *Swartzia montana*, *Ditrichum flexicaule*, *Grimmia ericoides*, *Amblystegium aduncum*, *A. sarmentosum*, *Campylium hispidulum*, *Stereodon revolutus*, *Isopterygium nitidum v. pulchellum*, *Cephalozia albescens v. islandica*, *C. bicuspidata* and *v. cavifolia*, *C. divaricata f. elongata*, *C. striatula*, *Blepharostoma trichophyllum*, *Jungermannia socia*, *J. ventricosa*, *J. minuta*, *Cesia concinnata* and *Prasanthus suecicus*.

Between the mosses were, here and there, single specimens

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of *Silene, Polygonum, Oxyria, Salix arctica, Saxifraga oppositifolia f. reptans, Cassiope tetragona, Luzula confusa, Trisetum, Poa alpina* and *Festuca ovina.* All were low and far behind in development; *Oxyria* f. inst. was here 6 cm high, whereas at an altitude of 250 metres above the level of the sea it reached 31 cm.

This tract reached up to abt. 100 metres above the sea-level. Here began the talus proper, which is considerably steeper, strown with big down-slidden boulders, and has numerous dry brooklet beds with considerable gravel walls on the sides. It stretches from 100 to abt. 250 metres' height. It was covered by spare heather-moor which, on the gravelly walls merged into rocky-flat formation of a somewhat drier description than the above-named. Here were noted down:

Dryas octopetala f. *minor, Chamænerium latifolium, Silene, Alsine biflora, Cerastium alpinum, Draba alpina, D. Fladnizensis, D. hirta, Arabis alpina, Ranunculus pygmæus, Saxifraga cernua, S. decipiens, S. tricuspidata, S. oppositifolia, Vaccinium, Cassiope hypnoides, C. tetragona, Rhododendron, Arctostaphylos, Pedicularis hirsuta, Oxyria, Polygonum, Salix glauca, Luzula confusa, Carex nardina, C. rigida, Trisetum, Poa alpina, Festuca ovina, Equisetum arvense* and *E. variegatum.*

At a height of abt. 250 m the firm rock protruded as vertical walls "Hamre", highly intersected by clefts and with minute weathering products at the base. Here were found coherent plant covers, the fresh green colour of which is in contrast to the brownish gray heather-moor below. The cover consisted of: *Potentilla maculata, Sibbaldia, Melandrium apetalum, Alsine verna v. propinqua, Arenaria ciliata, Cerastium trigynum, Saxifraga nivalis, Sedum Rhodiola, Veronica alpina, Cassiope hypnoides, Phyllodoce coerulea, Campanula rotundifolia, Antennaria alpina f. glabrata, Erigeron uniflorus, Arnica, Taraxacum croceum, Hieracium alpinum, Betula nana, Salix arctica, S. herbacea, Luzula spicata, Juncus trifidus, Carex scirpoidea* (♂ and ♀),

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Poa pratensis, P. glauca, Calamagrostis arundinacea and *Cystopteris fragilis.* In crevices in the rocks were found: *Potentilla nivea, P. maculata, Arabis alpina, A. Holboelli, Alsine verna v. hirta, Cerastium alpinum, Draba nivalis, Saxifraga tricuspidata, Veronica saxatilis, Campanula rotundifolia, Salix glauca, Carex capillaris, C. pedata, Trisetum, Poa glauca* and *Woodsia ilvensis.*

This vegetation reached up to a height of 600 metres; the top of the mountain, 600—720 metres, was very sparely covered by lichens *(Cetraria nivalis* and *islandica, Stereocaulon, Lecanora*-species and others) together with mosses, among which especially *Grimmia hypnoides* made large tufts, whereof were collected: *Polytrichum sexangulare, Sphaerocephalus turgidus, S. palustris, Pohlia gracilis, Dicranum congestum, Plagiothecium denticulatum, Cephalozia pleniceps* and *Jungermannia quinquedentata.* Between the moss-tufts were found very few vascular plants, all dry and in fruit or in a far advanced state of flowering. I noted: *Cerastium alpinum* f. *lanatum, Draba hirta, Luzula confusa, Carex nardina* and *Poa glauca.*

The cause of this poverty of species was not the height above the sea, for the distance from the above named luxuriant vegetation was but slight, but is to be sought in the scarce supply of water at the top. Here were no perennial snow drifts, altogether no sign of snow-covering such as farther down and no depressions where the water might collect and stagnate; on the contrary, the rock was so cracked through all over, that all downpour must disappear immediately after the fall so as to benefit the vegetation farther below on the side of the mountain.

That the height does not interfere with the occurrence of the plants is seen by the following list of plants collected by Koch on Henry Land, abt. 940 m up to ab. 1000 m:

Chamænerium latifolium.
Silene acaulis.
Alsine biflora.
Alsine verna.
Melandrium apetalum.
Cerastium alpinum v. lanatum.

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Draba alpina.
Papaver radicatum.
Ranunculus glacialis.
Saxifraga decipiens.
— *cernua.*
— *tricuspidata.*
Pedicularis hirsuta.
Vaccinium uliginosum.
Cassiope tetragona.
Rhododendron lapponicum.
Campanula rotundifolia.
Arnica alpina.
Salix glauca.
Oxyria digyna.
Polygonum viviparum.
Luzula confusa f. subspicata.
Poa pratensis.
— *glauca.*
Phippsia algida.
Cystopteris fragilis.
Woodsia ilvensis.
Polytrichum sexangulare.
Sphaerocephalus palustris.
— *turgidus.*
Dicranum congestum.
Grimmia hypnoides.
Plagiothecium denticulatum.
Odontoschisma Macounii.
Cephalozia pleniceps.
Martinella Bartlingii.
Jungermannia quinquedentata.
Nardia minor.

These plants were gathered on the mountain side from a height of 940 m up to the 1000 ms. high top partly on herby slopes, partly on the rocks near the top. It is easily seen, that the top has had the same spare flora, while the herby slopes, although 250—300 metres higher than the mountain top ascended by me, have had a character corresponding to the herby slopes in a height of 500—600 metres.

Turner Sund (N. Hartz).

The vegetation is as a rule very poor upon the mountain-slopes and on the narrow foreland by Turner Sund. The lack of stability of the soil is probably an essential cause for the poverty. The weathering of the basalt is very considerable out here at the coast; the melting-water and the avalanches in spring, mountain-slides in the summer-time tear up the steep slopes with a prodigious force; huge holes and deep furrows are often seen in the cones of débris and in the gravel, even away in the narrow lowland between the mountain slopes and the sound. The remnants of the destroyed

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Fig. 3. *Salix arctica*, $^1/_2$ nat. size, phot. CHR. KRUUSE.
Gravelly bottom Turner Sund. The cape 27 7 00. Completely decumbent bush; the rugged branches wind between the gravel, no branch and no leaf rises 1 cm above the gravel a few small specimens of *Stereocaulon* in the gravel round the *Salix*-bush).

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and killed vegetation are often seen in the midst of the destroying, down-rolled masses of stones.

The plants often completely change their aspects in these exposed places. *Silene acaulis* evidently can endure a good deal; it is often seen with the strangest of shapes; the normal thick tuft with a circular outline is destroyed and torn up, and the single shoots are isolated; but so long as the long, obliquely lying (originally vertical) tap root is well anchored amongst the stones the plant keeps in life and sets flowers and fruits (Fig. 4). *Arenaria ciliata* too is a plant which can live surprisingly long and well upon slides. On normal, tranquil ground it most often forms dense semi-globular tufts; but often did I see it on the sliding slopes with stretched joints and fibrous, yet flowering and fructiferous; also this plant has a long, powerful tap root reaching far into the ground.

Rarely have I seen a so marked »striate land« as in the basalt-tracts here at Turner's Sund, especially on the flat or gently sloping foreland between the mountain slope and the sound (mentioned and figured by O. Nordenskjöld in "Medd. om Grønl." XXXVIII, p. 274).

If one follows the direction of the basalt ridges and the coast line at a right angle to the »striae« one alternately passes walls of big, sharp edged blocks and grooves between the walls made up of finer material, gravel and sand, rushing torrents of melting-water and avalanches having torn open the surface, now here now there, at different times.

In the grooves is found an exceedingly poor — yet if the groove has been for some time preserved of more considerable devastations — tolerably continuous, cover forming vegetation, chiefly formed by the little *Anthelia julacea,* which is often completely blackened by old, dried-up membranes of algae (doubtless *Cyanophyceae*).

In the spring time these localities are exceedingly moist; then this vegetation does live; during our stay the proper mel-

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ting period was over and the topmost part of the grooves, nearest the foot of the mountain, was as a rule dry. Together with *Anthelia* are found some *Stereocaulon* and *Cetraria islandica* and a few phanerogams, but greatly scattered: *Oxyria digyna, Ranunculus pygmaeus, Ranunc. glacialis, Luzula confusa, Salix arctica* in small decumbent specimens (Fig. 3), rarely *Salix herbacea* (which is strangely scarce in this region), *Saxifraga cernua, stellaris, decipiens* and *oppositifolia, Polygonum viviparum, Cerastium alpinum, Chamænerium latifolium, Draba alpina, Silene acaulis, Cardamine bellidifolia, Alsine biflora.*

Whenever the groove is broad and has been left tranquil for a longer period *Dryas, Cassiope tetragona, Carex nardina, Papaver* and more species occur.

The *Anthelia*-crust cracks in the drought into little polygonal fields of a size of 2—5 cm^2; in the fissures between the fields (checks) there soon appears a small, fine, crisp form of *Cetraria islandica.* In proportion as one gets from the beach farther up towards the base of the mountain *Cetraria islandica* spreads more and more widely in the *Anthelia*-cover, *Cassiope tetragona, Vaccinium uliginosum* and other heath plants begin to occur; among others I noted in such places *Dryas, Pedicularis hirsuta* and *Grimmia (hypnoides?).*

While down at the beach, where in many places there still lay an enormous ice-foot and large snowdrifts, we still had the first spring with small, undeveloped flower buds and humidity in the *Anthelia*-cover; but according as we withdrew from the beach, we advanced into a more and more complete summer with flovering herbs and bone dry bottom; the difference in temperature was felt quite immediately.

The most luxuriant vegetation was found here as by Cape Dalton at an elevation of from 250—500 m above the sea level, where one is above the frequent cold fogs. During nearly the whole of our stay the fog kept covering the lowest part of the mountains.

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Viewed from a long distance here as there are seen green bands stretching horizontally across the mountain, evidently corresponding to the beds of the basalt. In below the «hammers» (rock ledges) there is always a narrow relatively quiet belt, where humus may collect and fine dust from the mountain slides settle down, while the big stones rolling downwards skip over; and here is found the most luxuriant vegetation, the greenest green in these tracts.

On the 25th of July I made a trip to the other side of the sound, chiefly in order to investigate some large whitish-yellow spots which could be discerned by the telescope from up the mountain side north of the sound; they were found to consist of white-burned schist (abt. 550 m above the level of the sea).

While the lowland was barren and desolate, cross furrowed by melting-water and avalanches, torn open by downs lidden blocks, in short as mentioned above, the vegetation got richer and more luxuriant in proportion as one came up the mountain.

Abt. 250 m above the level of the sea were seen large continuous carpets of decumbent *Betula nana* and *Vaccinium uliginosum*, at the edges bordered by *Empetrum*. Here were also noted the following species all in flower: *Pedicularis flammea*, *Sedum Rhodiola*, *Silene acaulis*, *Juncus trifidus*, *Cerastium alpinum*, *Taraxacum croceum*, *Antennaria alpina*, *Polygonum viviparum*, *Sibbaldia*, *Veronica saxatilis*, *Carex scirpoidea*, *Potentilla maculata*. Here was found a humble-bees' nest dug out by some animal (fox?) and lemmings. Abt. 450 m above sea level were only quite little dwarfspecimens of *Euphrasia latifolia* on gravel.

In the basalt-débris abt. 550 m above the sea-level: *Equisetum variegatum*, *Salix arctica* and *glauca*, *Campanula rotundifolia* (very low stalk, but large, deep blue flowers), *Arenaria ciliata* with a great many flowers (☿, ♀), *Poa glauca*, *Saxifraga nivalis*, *oppositifolia* and *tricuspidata*; the latter

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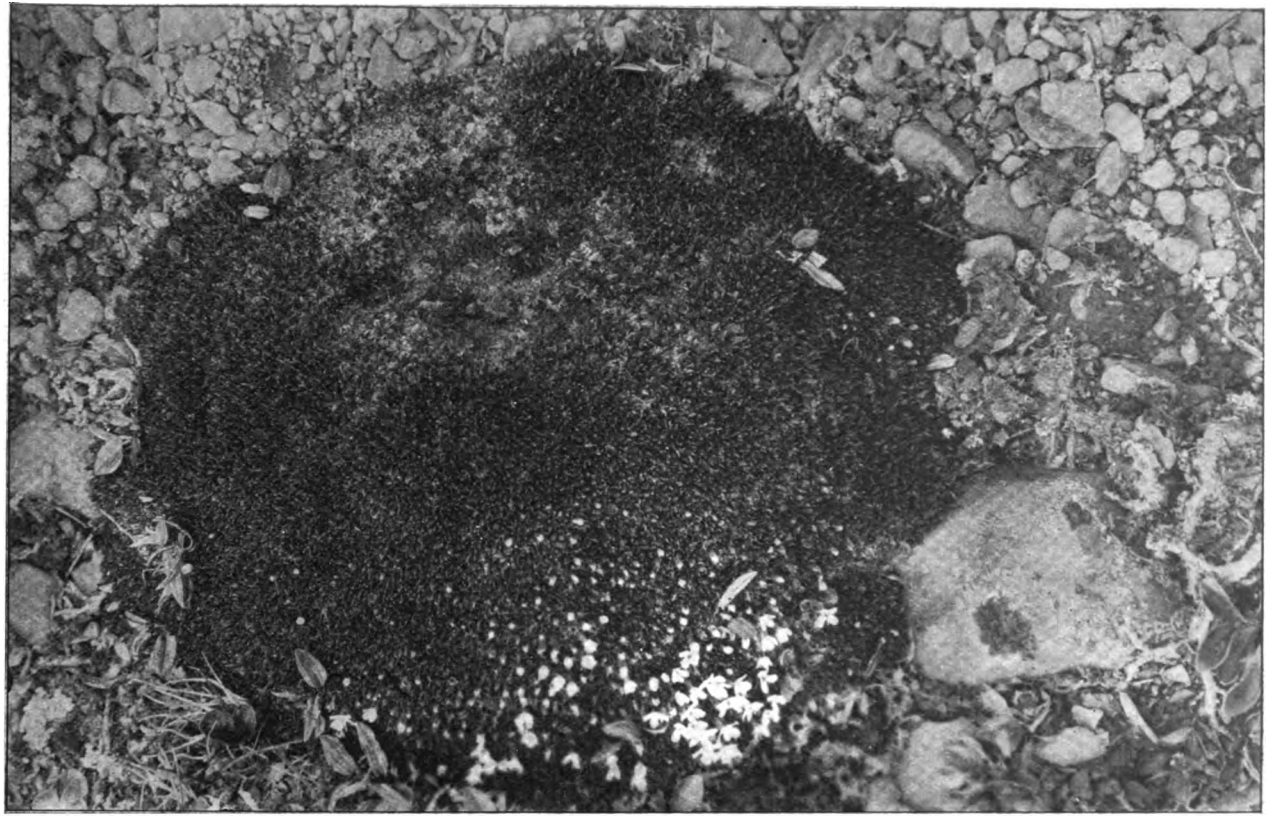

Fig. 4. *Silene acaulis*, 1/3 nat. size, phot. CHR. KRUUSE.
Gravelly bottom, Turner Sund, The cape. 27. 7. 00. The south side of the tuft is covered with flowers and flower buds, whereas its northside is killed by the wind (a few leaves of *Polygonum viviparum*).

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was very conspicuous with its deep red leaves; besides the small-leaved form of *Dryas octopetala*.

Vascular plants from Cape Dalton and Turner Sund.

Dryas octopetala and *f. minor*.
Potentilla maculata f. hirta.
— *pulchella*.
— *emarginata*.
— *nivea*.
Sibbaldia procumbens.
Chamænerium latifolium.
Empetrum nigrum.
Silene acaulis.
Melandrium apetalum.
— *triflorum*.
Sagina nivalis.
Alsine biflora.
— *verna*.
Arenaria ciliata v. humifusa.
Stellaria humifusa.
— *longipes*.
Cerastium alpinum.
— *trigynum*.
Cochlearia officinalis var.
Draba alpina.
— *crassifolia*.
— *nivalis*.
— *Fladnizensis*.
— *hirta*.
— *arctica*.
Cardamine bellidifolia.
Arabis alpina.
Arabis Holboellii.
Papaver radicatum.
Thalictrum alpinum.
Ranunculus glacialis.
— *pygmæus*.
— *hyperboreus*.
— *altaicus*.
— *nivalis*.
— *arcticus*.
Saxifraga nivalis.
— *stellaris v. comosa*.
— *cernua*.
— *rivularis*.
— *decipiens*.
— *tricuspidata*.
— *oppositifolia*.
Sedum Rhodiola.
Veronica alpina.
— *saxatilis*.
Pedicularis hirsuta.
— *lapponica*.
— *flammea*.
Euphrasia latifolia.
Pyrola grandiflora.
Arctostaphylos alpina.
Phyllodoce coerulea.
Cassiope hypnoides.
— *tetragona*.
Rhododendron lapponicum.
Vaccinium uliginosum.
Campanula uniflora.
— *rotundifolia*.

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Taraxacum croceum.
Hieracium alpinum.
Antennaria alpina.
Erigeron uniflorus.
Arnica alpina.
Koenigia islandica.
Polygonum viviparum.
Oxyria digyna.
Salix herbacea.
— *glauca.*
— *arctica.*
Betula nana.
Juncus biglumis.
— *triglumis var.*
— *trifidus.*
Luzula spicata.
— *confusa.*
— *spicata.*
Eriophorum Scheuchzeri.
Carex nardina.
— *ursina.*
— *scirpoidea.*
Carex glareosa.
— *rupestris.*
— *rigida.*
— *salina v. subspathacea.*
— *capillaris.*
— *pedata.*
Alopecurus alpinus.
Trisetum subspicatum.
Phippsia algida.
Glyceria vilfoidea.
Poa glauca.
— *alpina.*
— *cenisia.*
— *pratensis.*
Festuca ovina.
Calamagrostis arundinacea.
Lycopodium Selago f. appressa.
Cystopteris fragilis.
Woodsia ilvensis.
Equisetum variegatum.
— *arvense.*

Dunholm (N. Hartz).

On July 30th we went on shore for a couple of hours on this small island, a low split basalt islet, the highest summit of which lies abt. 30 m above the level of the sea. Over a large part of the island is a white covering of salt. Sun lit as it lay during our stay, in the midst of the dense sea of fog, surrounded by the crackling ice and made a kind and smiling impression upon all of us.

The vegetation is a pure strand vegetation; but 7 species of phanerogams were found: *Glyceria vilfoidea*, *Phippsia algida*, *Carex glareosa*, *C. salina v. subspathacea* and *C. ursina*, *Cochlearia officinalis v. groenlandica*, and *Stellaria humifusa*.

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In the reddish coloured carpet of the *Glyceria* shone thousands of little white starflowers (*Stellaria humifusa*); here and there low, dense, yellowish-green tufts of *Carex ursina* rose above the carpet, the inflorescenses quite hidden in the tufts. *Carex subspathacea*, this tiny inconspicuous *Carex*-species, which has no doubt been often overlooked in Greenland, was rather frequently intermingled between the *Glyceria*-cover, especially in the immediate vicinity of the beach.

In dry crevices in the basalt the *Cochlearia* grew very tall and vigorous and displayed a surprising abundance of flowers; down in salt marsh it kept lower (3—5 cm).

Around a small pool filled with algae and gnat worms — abt. 25 m above the level of the sea — stood as mentioned in the account of the voyage p. 164, a group of Esquimaux houses; on the ruins of the houses grew the same strandvegetation as everywhere else upon the island, only more luxuriantly on the manured ground. *Alopecurus alpinus*, ordinarily the faithful follower of Esquimaux houses could not be found here; it frequently grows on the slopes towards the open sea; but probably the saltness of the ground has been too much for it here.

On the low rocks brood a great many eider ducks, and between the nests grew *Glyceria vilfoidea* and *Stellaria* particularly high and luxuriantly between big bush-shaped lichens and *Grimmia*-tufts. — In rock crevices, where there was shelter, shade and manure, were found 20 cm high, etiolated *Cochlearia* with very thick fleshy leaves and ripe fruit.

On the west side of the island was a very low tract of land which was partly covered by brackish water, partly above water, yet so low that it is flooded at springflood, protected from the sea by a strandwall. The water was filled with algae, and the drained part of it covered either by dried up algal membranes or by a dense carpet of *Carex salina* v. *subspathacea* together with *Glyceria vilfoidea* (Fig. 5).

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Fig. 5. Isolated tuft of *Glyceria vilfoidea* upon cover of dried up algal membranes. Dunholm. (From photo. by Chr. Kruuse).

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Scoresby Sund.

Jameson Land, Dinosaur Cleft (Chr. Kruuse).

On July 31th we landed, as mentioned in the account of the voyage p. 167, about 5 miles north of Cape Stewart by the Dinosaur Cleft. The stream which runs through it is very abundant in water, fills up the whole bottom of the cleft, and seeks its way between and over numerous loose blocks. The cleft is narrow, and its steep sides are covered with débris of sandstone, which slip away under foot. Here and there a bit of solid rock, sandstone or basalt, sticks out and gives shelter to a little vegetation. At the top the cleft widens to a kettle-shaped valley, from which 3 more even, V-shaped river-valleys rise towards the plateau above Neills Klipper. I principally followed the north side of the cleft, where the vegetation was comparatively luxuriant and very abundant in species in contradistinction to the shady side, where snow-drifts and bare gravel alternate with little moss-grown patches.

Up to about 100 metres' elevation above the level of the sea the vegetation was rocky-flat formation, an open growth with the bare soil between the singly placed individuals; but these were tall, powerful, and in full blow, and the reason why they did not form a cover was evidently partly scarcity of water, partly the slipping, rather unstable ground. Wherever solid rock or large blocks hindered the gravel from gliding down were little covers, and especially where a little of the loose soil went right down to the bank of the stream, these were luxuriant. I noticed on this stretch of land the following species all in bloom:

Potentilla maculata, *Cerastium alpinum*, *C. trigynum*, *Draba hirta*, *D. Fladnizensis*, *Arabis alpina*, *Papaver radicatum*, *Chamænerium latifolium*, *Silene acaulis*, *Alsine biflora*,

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Saxifraga cernua, *S. oppositifolia*, *Rhodiola*, *Veronica alpina*, *Pedicularis hirsuta*, *Antennaria alpina* with *f. glabrata*, *Erigeron uniflorus*, *Arnica alpina*, *Taraxacum phymatocarpum*, *Oxyria digyna*, *Polygonum viviparum*, *Salix arctica v. groenlandica*, *Luzula spicata*, *Trisetum*, *Poa alpina*, *Festuca ovina*, and *Equisetum arvense*.

At an elevation of about 100 metres above the level of the sea there was some solid rock, at the foot of which a small strip of grassy slope had found shelter. Its plants were: *Poa glauca*, *P. pratensis*, *P. cenisia*, *Saxifraga nivalis*, *S. decipiens*, *Euphrasia latifolia*, *Gentiana tenella*, *Campanula rotundifolia* and *C. uniflora*. Beneath and upon the sides of the grassy slope was a shred of heather-moor, made up nearly exclusively of *Vaccinium uliginosum* with a spare intermixture of: *Potentilla nivea*, *Empetrum*, *Stellaria longipes*, *Cerastium alpinum*, *Draba hirta*, *Saxifraga cernua*, *Phyllodoce coerulea*, *Cassiope tetragona*, *Campanula rotundifolia*, *Hieracium alpinum*, *Arnica alpina*, *Salix glauca*, *Poa glauca*, *P. pratensis* and *Festuca rubra*.

The abovementioned little valley (150—170 m above the level of the sea) has sandy bottom and sides; on its western side is a large snowdrift, and the said three little valleys are filled with snow. The melting-water has dug little riverbeds through the sand in the bottom of the valley. The soil is fresh with sufficient humidity; mould is wanting; but there is shelter against the wind and favourable exposition. The bottom of the valley is covered by an extensive grassy slope. The cover was 5—10 cm high and consisted chiefly of: *Carex rigida*, *C. lagopina*, *Poa pratensis*, *Sibbaldia procumbens*, *Cerastium alpinum*, *Veronica alpina*, *Taraxacum phymatocarpum*, *Arnica alpina*, *Oxyria digyna*, *Equisetum arvense*, and *Polytrichum juniperinum*.

As a less constituent part were found intermingled among these dominant species: *Potentilla maculata*, *Epilobium ana-*

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gallidifolium, Silene acaulis, Arenaria ciliata, Alsine biflora, A. verna v. rubella, Draba hirta, D. Fladnizensis, D. arctica, D. alpina, Arabis alpina, Thalictrum alpinum, Ranunculus pygmæus (partly *f. Langeana*), *Saxifraga nivalis, S. stellaris v. comosa, S. decipiens, Rhodiola, Cassiope hypnoides, Antennaria alpina, Erigeron uniflorus, Polygonum viviparum, Juncus biglumis, Luzula confusa, Carex lagopina, Alopecurus alpina, Hierochloa alpina, Trisetum,* and *Arctagrostis latifolia.*

Higher up, between 170 and 250 m above the level of the sea, upon the slopes surrounding the valley the loose layers of soil consisted of gravel with numerous much weathered blocks. They were incompletely covered by low heather-moor with large open patches where the gravel slips down. Here were noted: *Empetrum, Vaccinium, Cassiope tetragona, Dryas octopetala, Arctostaphylos alpina, Betula nana, Salix herbacea, Pedicularis lapponica, Carex nardina, C. rupestris, C. misandra, Hierochloa alpina, Pyrola grandiflora* and *Draba alpina.*

Finally the open tableland above Neills Klipper was covered by rocky-flat formation, the most conspicuous plant of which was *Salix groenlandica.* It did not rise 3 cm above the ground, the boughs were at most 5 mm thick and not exceeding 40 cm in length with very few leaves. After the willow *Dryas octopetala f. minor* and *Papaver radicatum* were the most prominent plants, and the vegetation is exactly congruent with the description given by Hartz in "Medd. om Grl." XVIII, p. 135. This vegetation stretches, as far as we have been able to ascertain, over the whole east side of Jameson Land along Neills Klipper, and is succeded only in valleys and beds of brooks by heath or pools. It certainly is dependent on the wind-open nature of the tableland; here the snow can only make a very thin cover in winter; it melts quickly away, and the place is soon as dry as a bone. No perennial plant can rise considerably above the ground, as in that case it

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would be dessicated or worn off here where no shelter is to be had and the blocks themselves scarcely rise 5 cm above the bottom. The more wonderful then it is to find in this naked rocky-flat formation so many musk-oxen as was the case. I saw myself two flocks; others of the landing party saw two other flocks and some single bulls, and in the neighbourhood of this place Deichmann later on killed 14 of these animals. It is, however, an unquestionable fact that the musk-ox chiefly feeds on the leaves and young shoots of *Salix arctica*, and this is just the place where it is likely to find them in the greatest extent, and I am apt to think that it takes to the rocky-flats in winter also, because the snow-coating is thin up here and accordingly easily broken through. In summer it is not found in the lowlands of Klitdalen, and even the luxuriant grass-meadows around the ponds upon the Liverpool Land were only sparely grazed. The clipping of the grass we saw here was irregular, was found closest to the water, always accompanied by great quantities of excrements of geese, and therefore surely due to these animals. On the contrary, great quantities of the manure of musk-oxen together with plain vestiges of grazing were found upon the flat abunding in *Salix* and *Dryas* at Jameson Land east of Nathorst Fjæld, and in the brook-valley north of this were seen some lone animals.

From the Dinosaur Cleft the voyage was carried on to the Fame Islands, where we lay at anchor from the 1st to the 10th of August.

Fame Islands (Chr. Kruuse).

The Fame Islands are a small group of little islets with low rocks, among which are low, nearly horizontal flats consisting of clay and gravel. The single rocks have evidently been separate islets at a time when the height of the water

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was greater, and then a considerable precipitation has taken place in the little tranquil sounds. Now the flats lie 2—5 m above the surface of the water somewhat inclined towards the beach, which is reached in rather narrow interstices between the rocks. Here the surface gets a litle more curved downwards and ends in a small bluff, where the sea is at present eroding. Their surfaces are strown with small flat stones (up to

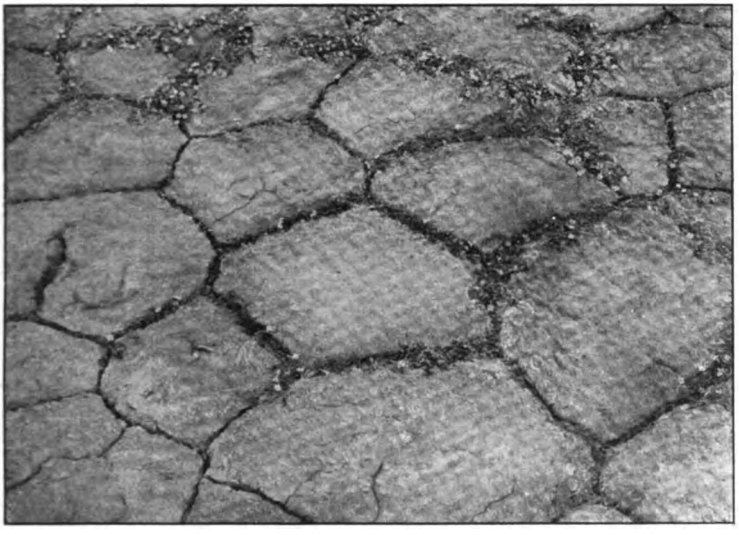

Fig. 6. Young "Rudemark" with *Stellaria humifusa* in the crevices. Fame Islands. (From photo. by Chr. Krause).

10 cm in diameter) covered with a rather scarce growth, especially towards the centres; but thus the condition of the bottom shows the plainer. During our stay the bottom was completely dry, stonehard and cracked into irregular, polygonal checks with 5 or 6 sides and greatest diameter at a right angle with the slope ("Rudemark", fig. 6—8). The cracks separating them are up to 6 cm broad, and one may introduce into them a 17 cm long straw; but they are doubtless often much deeper. I saw them in all developmental stages, now one year old filled

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with *Stellaria humifusa* (see fig. 6), *Cochlearia officinalis* f. *minor* with numerous cotyledonous plants, *Glyceria vilfoidea* or *Dryas*, now new ones, which are still standing with sharp edges without any vegetation, or beginning ones, which are as yet represented only by fine scratches.

It was not until I saw the outmost, arched parts of the check-field that I had a clear understanding of the formation

Fig. 7. Sliding clay ("Rudemark") with semi-covered *Silene*-tufts. Fame Islands. (From photo. by Chr. Kruuse).

of this net of cracks. Here the clay was evidently in movement in the wet season. In the spring the whole mass, soaked and plastic, will slide gently downwards to the beach, where the breakers successively lick it away. The bottom is here naked, at the most covered with flat pebbles, but here and there, with long intervals stand tufts of *Silene acaulis*, *Armeria sibirica*, *Arenaria ciliata*, *Taraxacum phymatocarpum*, *Stereocaulon denudatum v. pulvinatum*, *Cetraria*

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nivalis. These are all of them densely tufted plants with a powerful, deepstriking main-root anchoring them solidly. The individuals are vigorous — the biggest *Silene*-tuft that I saw was 8 cm in diameter — but on all sides surrounded by the clay which rises 8—14 mm above the borders of the tufts (see fig. 7); here and there are tufts, which are inundated barring the inmost shoots, and dead tufts, which have evidently once been buried, but have been bared again by abra-

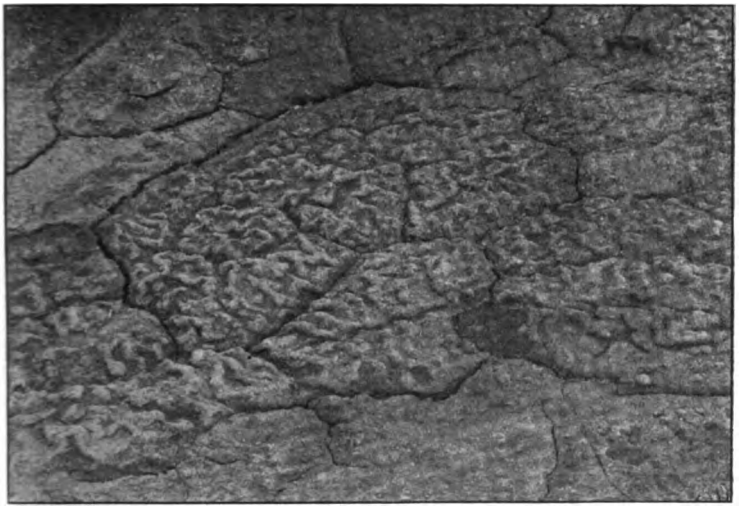

Fig. 8. Young "Rudemark". A gently inclined flat of clay covered with algæ and Hepaticæ with new crevices. Fame Islands. (From photo by Chr. Kruuse).

sion, are also seen. Here the crack-systems go across the flat (at right angles to the inclination) but are little arched, so that a series of corresponding checks make an arch with the convexity towards the sea. It is evident that the extremes of the clayey flats "trail" against the rocks, so that the movement is strongest in the middle.

Wherever the humidity has kept a little longer in the summer the surface is covered by a blue-gray, abt. 5 mm thick layer of algae with a spare admixture of *Anthelia ju-*

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lacea, which in the checks lies in irregular folds of abt. 7 mm height (see fig. 8).

The inmost part of the flats, which is highest located, is very much washed out, and here the loose layers of soil consist of sand and gravel, which is nearly bare and drifts a little; here are only found a few decumbent, highly windworn individuals of *Salix groenlandica* (with *Melampsora arctica*) *Silene* and *Elyna Bellardi*.

In crevices and upon ledges as well as upon the rocks is found a powerful vegetation consisting of:

Dryas octopetala, *Potentilla pulchella f. elatior*, *P. nivea*, *Empetrum*, *Silene*, *Melandrium triflorum*, *Stellaria longipes*, *Cerastium alpinum*, *Arenaria ciliata*, *Lesquerella arctica*, *Saxifraga oppositifolia f. pulvinata*, *Rhodiola*, *Arctostaphylos alpina*, *Pedicularis hirsuta*, *Taraxacum phymatocarpum*, *Erigeron uniflorus*, *Arnica alpina*, *Polygonum*[1]), *Salix glauca*, *Betula nana*, *Luzula spicata*, *Carex incurva*, *Poa alpina*, *P. glauca f. elatior*, *P. pratensis*, and *Cystopteris fragilis*.

Finally *Glyceria vilfoidea*, *G. angustata*, *Stellaria humifusa*, *Cochlearia officinalis v. groenlandica*, and *Carex ursina* grow near the sea.

Jameson Land of Fame Islands (Chr. Kruuse).

From Vargodden towards Nathorst Fjæld extends a low sandy flat crossfurrowed by the delta arms of the streams and by dry, abandoned ditches; it is evidently a marine terrace, the building up of which is still being continued, an extensive flat with 15 cm of water (and more), which is partly dry at low water, stretching outside the present, feebly marked coastline. Its demarkation towards the deep water is distinctly marked

[1]) Very much injured by *Puccinia septentrionalis* and *Sphaerella hydropiperis*.

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by a steep fall. The coastline is indicated by a very low (20—40 cm high) strand-wall of sand with sticks, leaves and, although very sparely, algae. It is thinly covered with *Glyceria distans.* Within, the sandy flat is low (hardly 10 cm above the level of the sea at high water), nearly plane, moist (groundwater in 7 cm depth), with many empty watercourses. It has a very scarce growth of *Glyceria vilfoidea, Potentilla pulchella, Stellaria humifusa* and *Cochlearia groenlandica.* There are abt. 2 metres or more between the respective tufts. Inside this extensive flat is found an old beach-line where the land rises to a flat 40—60 cm above the present height of the water. On this flat, where the groundwater is only found in 30—35 cm depth, grows *Glyceria distans, Carex ursina* and *Potentilla pulchella,* and also, in smaller numbers, *Salix arctica* and *Taraxacum phymatocarpum.* There is, on an average, 2—3 metres between the tufts, and the sand is elsewhere completely bare with the exception of some small flat depressions, viz. sanded-up watercourses, where the sand is namely slightly greenish from algae *(Confervae* and *Desmidiaceae).*

The individuals are strongly tuftshaped *Carices* and tunicate *Glyceriae,* and leaves and stalks are covered by clay and sand-dust. The surface of the sand is hard, sand drift is not seen, no more are dunes; the whole surface is full of little fissures and gives one the impression of being inundated in winter and during the period of melting.

Within this flat the land rises gently to abt. 1 m's height above the level of the sea; only here and there are seen the half obliterated vestiges of an old terrace-border. It is covered with *Salix groenlandica* in great specimens together with some few *Alopecurus alpinus*; here also are great open intervals between the tufts.

This *Salix*-flat rises evenly inwards till a height of abt. 2 m above the level of the sea and becomes more dry. The surface of the sand is now loose, it drifts.

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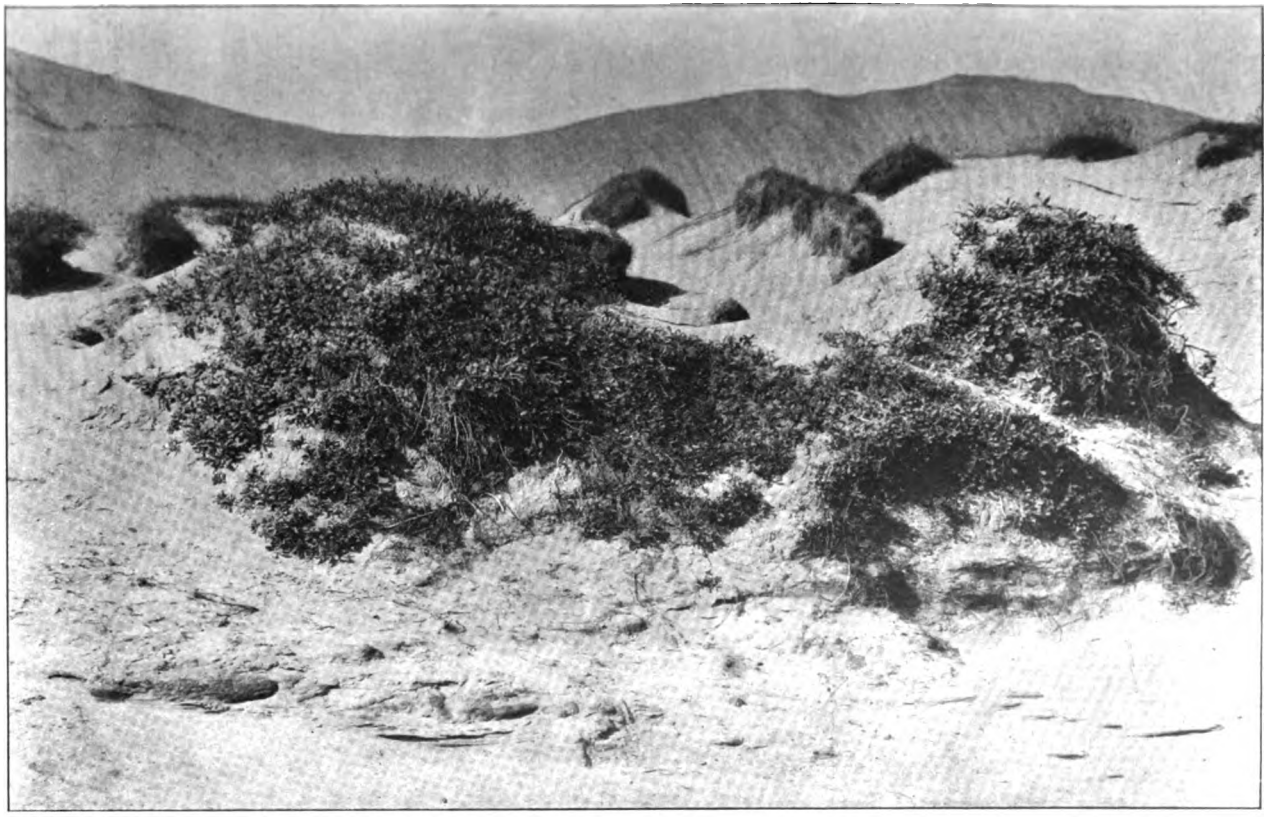

Fig. 9. Drift-sand with *Salix* and *Festuca rubra*. In the fore-ground the dune is broken down showing dark streaks of former vegetation-cover. Jameson Land of Fame Islands. (From photo. by CHR. KRUUSE).

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On the flat is a narrow, 2—3 (sometimes 4) m high sandy area, extending lengthwise from north to south, the surface of which is loose sand covered with *Festuca rubra* and *Poa pratensis,* standing with intervals of abt. 5 cm between the straws. Towards N. and N. E. the sand-area has nearly vertical walls (fig. 9) in which are seen undulating, irregular, wedging out, humous dark layers of a thickness of up to 6 cm and varying in extension. Besides sand these dark layers contain clay and some roots, both fresh and mouldered, but no remnants of leaves and stems.

The slopes have evidently been formed by the wind which has broken up the sand and carried it towards south; thus, there is in front (north of them), a flat with numerous little hillocks of sand (30—60 cm in diameter and 20—40 cm high) formed around or, at any rate, covered whith *Carex incurva;* it is evidently the abrasion-flat where the sand has formely been located. At the south end of the sandy area the sand settles again in loose, softly undulating heaps with windstreaking in the direction E.—W. In and upon the sand grows *Salix arctica* f. *groenlandica* (possibly also *S. glauca* f. *subarctica*) and *Carex incurva*, a more secondary constituent being formed by *Chamœnerium latifolium* and *Poa pratensis. Salix* forms metrehigh, on the leeside (S) freshgreen tufts, the interiors of which are filled with sand, and which are covered on the windside (N or NNW) by the white micaceous sand, which has only a slight inclination.

The willows evidently thrive exceedingly well under these conditions, the individuals are bigger and more vigorous than usually, boughs and stems certainly are seldom more than 1 cm thick but, in return, rank, and the ramification is richer than usual. The leaves are large and close-sitting, and fructifications are very common. The year-shoots are, on an average, 7 cm long and erect or at right angles with the surface of the sand. The willow is best characterized as espalier on the

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sunny side and lee-side of the sand (these terms being identical here). That no vigorous main trunk is found, as generally with the espaliers, is probably due to the travelling of the sand.

The sand-drift surely takes place principally during the summer halfyear, as the sand the other time must be frozen and covered by snow and snow-crust; were the contrary the case one would be sure to see also traces of sand-wear upon the older, 2—3 years old shoots; but such are not seen. On the other hand the young 1—2 year old shoots forming the windward side of the bush are, as a rule, eroded and either killed or dying, and the destruction is slowly advancing towards the leeside, while at the same time its shoots are being covered by sand. Sometimes the wind gets the upper hand, and the bush is totally killed, and the sandhillock is demolished; the remnants of it are then seen as an irregular, one metre high cone, loosely covered by free-hanging branches and roots of willows and showing the above mentioned stratification.

Between the *Salix*-tufts are also seen the peculiar sand-formations which we named "coffins" (cpr. p. 399 and fig. 24). They are longish, narrow elevations with steep sides, which have here the direction E—W, i. e. from Nathorst Fjæld towards Hurry Inlet, and are here covered whith *Festuca rubra* v. *arenaria, Carex incurva* and *Poa pratensis.*

Festuca, which is the most frequent one, has horizontally creeping rhizomes and 15—20 cm high single straws, which at the ground are encircled by old straws and sheaths. Viewed from a distance it forms a rather dense, undulating covering. *Poa pratensis* is found much less frequently, but has a similar growth, still its lateral shoots are not so long as those of the former. *Carex incurva* forms here little tufts of abt. 10 cm height with closely placed leaves and straws encircled by remnants of old leaves; it can, however, also form a very open, abt. 5 cm high cover. It sticks more firmly to the sand than *Festuca,* and can endure considerably more erosion; it is there-

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fore also this latter which remains, when the sand is torn up by the wind. The bottom between these gramineous plants is, both upon the "coffins" and upon the sandy flat, quite bare; neither mosses nor lichens are found.

Within this sandy area the sandflat was continued somewhat farther with an elevation of abt. 1 m above the level of the sea, but sank again to a height of abt. 70 cm in a very broad, flat depression. This is evidently an old bed of the stream which comes from the northern side of Nathorst Fjæld, whereas the above-mentioned sandy area represents a delta-island.

The depression was cross-furrowed by ditches, which had at some places, in a depth of 50—60 cm, a little stagnant water. These are beds of brooks, which in this spring have been dug out by the melting water from Nathorst Fjæld, but are now on the point of drying up. Their direction is indicative hereof, as they follow the line of gravitation from the mountain, but later on incline towards south and are lost in the large flat of the old riverbed. I suppose that the latter is flooded in the snowmelting period.

On the edges and sides of these ditches grew a hydrophilous vegetation made up of: *Equisetum variegatum* f. *anceps*, *Juncus biglumis*, *J. castaneus*, *Alopecurus alpinus* and, here and there, little specimens of *Salix arctica*. Between these the sand was coherent and greenish-coloured by algae, and in very moist spots grew little specimens of *Marchantia polymorpha*.

From within the depression the land rises evenly and is covered by a rather dense, abt. 5 cm high heath, formed by:

Dryas octopetala, *Salix groenlandica*, *Pedicularis hirsuta*, *Stellaria longipes*, *Polygonum viviparum*, *Elyna Bellardi* and *Alopecurus alpinus*. All these plants were greatly clipped by grazing, and frequent excrements bore witness that the musk-oxen had been here recently. Besides the bottom was undermined by lemmings so densely, that there was nearly one hole

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per one m², and many of the plants, yet chiefly *Polygonum* and *Salix*, were distinctly marked by the jaws of this small animal. Nevertheless I did not see during my stay here one single lemming above the ground; nor did the musk-oxen show up here during the whole of our long sojourn at the anchorage. On the contrary the ground was in many places covered with the footprints of wolves, and a few wolves that we saw at Vargodden were making for this place.

In the heath were dominant: *Dryas octopetala* f. *minor*, *Betula nana*, *Vaccinium uliginosum f. microphyllum* and *Arctostaphylos alpina*. Among these were found in lesser numbers: *Chamaenerium latifolium*, *Papaver radicatum*, *Draba alpina*, *D. hirta*, *Lesquerella arctica*, *Arabis alpina*, *Saxifraga oppositifolia*, *Pyrola grandiflora*, *Pedicularis hirsuta*, *Arnica alpina*, *Polygonum viviparum*, *Oxyria digyna*, *Salix glauca* v. *subarctica*, *Elyna Bellardi*, *Carex lagopina* and *Trisetum subspicatum*.

In the rocky-flat formation above *Chamænerium latifolium* and *Arnica alpina* especially attracted notice by their numbers and the size of the flowers. The mountain-side itself was very poor in vegetation, cross-furrowed as it was by clefts of wild brooks, whose stony ranges and ditches also extended over the foot of the mountain, where they appear, however, with less force.

Liverpool Land of Fame Islands (Chr. Kruuse).

The coast of Liverpool Land stands, at the head of the inlet, with a steep bluff, while the more southern coast slopes down gently; on Jameson Land it is the reverse. Here the head of the inlet is flat, whereas Neills Klipper farther south descend abruptly to the sea with a step talus. This is surely due to the condition of the currents in Hurry Inlet. Along Liverpool Land the current runs in-shore at flowing tide,

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and as there is here no stream of any importance, there is no deposition of layers, but a demolition is going on of formerly deposited sediment. Along Jameson Land the current runs at ebbing tides off-shore (southwards), carries along the enormous sand masses from the streams of Klitdalen, and deposits them northernmost along the western side as big sand flats.

Just opposite to the Fame Islands the coast bluff of Liverpool Land is 20—25 m high and inclines abt. 30° towards the horizon. It consists of sand, sandy clay, and gravel with boulders of up to the size of a hand. At the top, and in the nearest vicinity of the sea, it is completely vertical; it is evidently an old marine terrace (which is also suggested by spare shell-fragments) formed by materials from névé-brooks at a time when the Liverpool Land was covered by the inland-ice. Outside the beach a new terrace is forming all the way towards the Fame Islands; there is from 20 to 50 cm water upon it.

The bluff towards the sea is sparely covered with *Chamaenerium latifolium, Braya purpurascens, Lesquerella arctica,* and down-slidden parts of the vegetation of the surface.

The surface of the terrace is a stony plain, densely paved with little flat boulders and with a thin clayey coating between the stones. Sand drift is not found. It is sparely covered with low specimens of: *Dryas octopetala* f. *minor* and **integrifolia, Erigeron uniflorus, Polygonum viviparum* f. *alpina, Salix arctica* f. *groenlandica, Elyna Bellardi, Carex nardina, Poa glauca,* together with the following lichens: *Cetraria nivalis, C. islandica* v. *crispa, Parmelia saxatilis, Psora atrorufa, Stereocaulon denudatum* v. *pulvinatum, Xanthoria vitellina, Urceolaria scruposa* etc.

The distinctly tuftshaped individuals are much eroded, it being not, however, possible to show any precisely marked direction of the wind. Two *Erigeron uniflorus*-tufts, which grew hardly 25 cm apart from each other, were injuriously affected,

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one from the south, the other from the north, and the case is much the same with the *Dryas*-specimens (Fig. 10). The ground between the phanerogams is mainly naked, and even the lichens are greatly cowed and worn. The scantiness of the vegetation is, however, due chiefly to scarcity of water and, secondly, to want of shelter.

Fig. 10. *Dryas octopetala*. Liverpool Land. A highly windworn specimen. del. H. Olrik.

At a somewhat greater distance from the bluff the surface descends to flat depressions partly without outlets, partly with outlets in narrow clefts, which cut through the terrace and are formed by brooks, now partly dried up or nearly waterless. Here is found a somewhat richer and, above all, higher vegetation, which is, however, only exceptionally able to cover the bottom. I noted:

Melandrium apetalum, Stellaria longipes, Saxifraga oppositifolia, S. nivalis v. *tenuis, Armeria sibirica, Pedicularis hirsuta, P. flammea, Rhododendron lapponicum, Vaccinium, Arnica alpina, Salix groenlandica, Polygonum, Juncus biglumis, J. arcticus, J. castaneus, Eriophorum Scheuchzeri, E. polystachium, Carex nardina, C. rigida, C. rariflora, C. rupestris, C. lagopina, C. ursina, C. capillaris, Glyceria Vahliana* and *Equisetum arvense.*

Farther inward, towards the east, this vegetation, which in the most humid localities had the appearance of pools without continuous cover, is continued in a luxuriant *Cassiope*-heath with a dense, 10—15 cm high cover. The few herbs were quite secundary. I noted here:

Potentilla maculata, Cerastium alpinum v. *lanatum, Draba alpina, Saxifraga oppositifolia, Pedicularis hirsuta, Erigeron*

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uniflorus, Luzula confusa, Carex nardina, Hierochloa alpina and *Poa alpina.*

Through the heath-flat stretched some winding 5—15 metres high gravelly (clay and sand with boulders) walls; their sides were rather steep (20—25°), the surfaces slightly arched or flat, from 2—10 m broad. They were covered with a rather open vegetation consisting of:

Potentilla nivea, P. maculata, Sibbaldia, Cerastium alpinum, Alsine biflora, A. verna, Melandrium triflorum, Rumex acetocella, Draba alpina, D. hirta, Arabis alpina, Saxifraga cernua, S. decipiens, Armeria[1]*), Pedicularis flammea, Campanula uniflora.*

On the plain between the walls are found numerous shallow ponds surrounded by meadows or bogs, which are evidently flooded in the spring time. The meadows, which are smaller in extent, are chiefly made up of *Carex pulla* (with *Leptosphaeria epicareta), C. scirpoidea, Poa pratensis, Arctagrostis latifolia, Phippsia algida, Juncus castaneus, Koenigia islandica, Cardamine pratensis, Ranunculus altaicus* and, nearest the margin and in the water, *Pleuropogon Sabinei* (fig. 11). It stands lonely or, at most, two or three specimens together without covering the bottom, which consists of sand with a 1—2 cm thick layer of mud, preferring seemingly little sheltered bays between blocks of stone. It is by no means rare here, but blooms sparely, and is when sterile difficult to recognize, for which reason it is easily overlooked, the more so because its habitat is one of the most disagreeable places in the country on account of the countless hosts of gnats hovering round the water. They were to the highest degree hampering during the work, so much that e. g. I was hardly able to keep the lens of the apparatus free of them while photographing.

The water in the ponds is greatly filled with gnat-worms, but I did not see other insects or crustacea. In the water it-

[1]) Attacked by *Pleospora platyspora.*

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self stood a very thin-stemmed form of *Equisetum arvense*, *Hippuris vulgaris*, and *Ranunculus hyperboreus* in small numbers, so that they were nowhere able to cover the bottom or even import to it a green colour; in somewhat greater quantities were found *Amblystegia*, and along the border *Spaerocephalus turgidus* and *Pohlia albicans* v. *glacialis*.

The tufts of the bogs were covered by *Carex scirpoidea*, *C. pulla*, *Arctagrostis latifolia*, *Ranunculus pygmaeus*, *Cassiope*

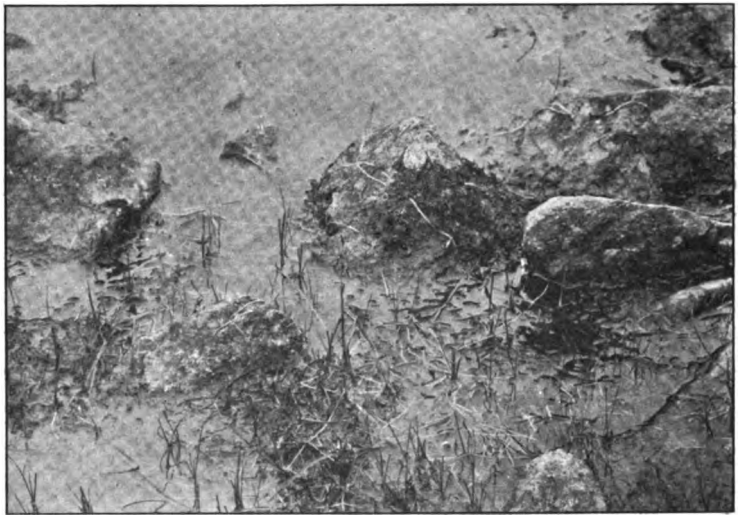

Fig. 11. *Pleuropogon Sabinei* in the margin of a pond. Liverpool Land, Hurry Inlet. (From photo. by CHR. KRUUSE).

hypnoides, *Pedicularis flammea*, *Equisetum arvense* and *Marchantia polymorpha*, *Russula* sp., *Boletus scaber* and *Lycoperdon favosum*.

The tufts were abt. 30 cm high and their shady sides completely covered by the dark green thallus of *Marchantia;* the checks were quite bare of any vegetation.

Both the meadows and the pools were highly clipped by the grazing of geese, the excrements of which were found in abundant quantities on the banks; also the musk-oxen seek the

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ponds, although, probably, only in order to drink. In the soft bottom I often saw their traces, on the other hand no regular grazing was found nor any of their manure.

Inside the low country the archæan rocks rise in gentle, iceground slopes, and here the vegetation changes completely in character. The rather meagre *Cassiope*-heath is succeeded by a luxuriant *Vaccinium*-heath with a dense cover of from 15 to 20 cm height (Fig. 12). The bushes are up to 36 m², fresh green or red in the top from *Exobasidium* and sometimes spotted by *Lophodermium maculare* and have abundant ripe fruit. The formation is a nearly pure Vaccinietum, and merely secondarily was found here and there a specimen of *Empetrum* or *Cassiope tetragona;* on the contrary, there were large patches with *Betula nana,* especially at the steepest spots with southern exposition; the branches rose here to 25 cm above the ground, and the cover was completely dense. The leaves had, however, already begun to assume their orange-tawny, autumnal hue, and the fruit was ripe. With regard to herbs the only ones found here were *Cerastium alpinum, Pyrola grandiflora, Arnica alpina*, and *Polygonum viviparum* f. *vulgare* (Fig. 12).

About where the *Vaccinium*-heath borders on the lowland was found a semicircular wall of gravel and stones with its concave side facing the mountain side. Into it ran a small brook, whose water collected to a pool in the middle and disappeared into the ground, to reappear as springs farther down the slope. An arm of the brook turned the southern side of the wall. The inward hollow was covered, between glacial blocks, with *Vaccinium*, only the pool in the middle was devoid of vegetation. Towards the summit of the wall *Vaccinium* became more small-leaved (f. *microphyllum*), low and adpressed to the ground, and on the upper side very leafless, so that the lichen-covered ground was seen everywhere. On the arched upper-side of the wall, and only here, were found some dead, greatly

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Fig. 12. Luxuriant *Vaccinium*-heath with *Cerastium alpinum* and *Salix*. Liverpool Land in Hurry Inlet. (From photo. by CHR. KRUUSE).

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dried up, weathered individuals of a *Salix* (species indeterminable) lying closely adpressed to the ground. The stems had a very irregular section, by the ground they are 6,8 cm in compass and have abt. 100 year-rings. The biggest among them may have covered abt. 2 m^2 when in life, most were still so firmly rooted that it required some exertion to lift them from the ground. The root was not decayed. The highly bilateral arrangement of the stems, without considerable upright branches or rests of such, suggests that they have been decumbent individuals which have lifted their year-shoots only 15—25 cm above the ground. The most remarkable feature about these *Salices* is that we did not find anywhere on the localities living *Salix*-individuals of a corresponding size. The only place where I did note such a one is at the North-eastern bay, where an espalier reached 1 m in height and 1,5 m in length up an erratic boulder.

Southwards, the mountains of the Liverpool Land rise to a rather even, slightly undulating table-land ending at last in Cape Tobin and Cape Hope. Its surface is, as mentioned by Koch (Med. o. Grl. XXVII, p. 293), snowless and covered with boulders, the surface being very frost-blasted as well. The vegetation is exceedingly scarce. I followed the coast, in a distance of abt. 1 mile, from the middle of Hurry Inlet till Rosenvinge Bugt when, on the 11th of August, I was ashore to search for musk-oxen, but only noted down the following species:

Vaccinium uliginosum, Salix arctica, Cassiope tetragona, C. hypnoides, Saxifraga oppositifolia, Cardamine bellidifolia, Luzula confusa, Amblystegium exannulatum, A. turgescens, A. Sendtneri, Cephalozia bicuspidata v. *cavifolia, Anthelia nivalis, Jungermannia alpestris, Cetraria islandica, Stereocaulon, Cladoniae* with more lichens.

Along the sea-coast, which I followed when returning, were found here and there sandy or clayey flats covered with *Calamagrostis arundinacea* and *neglecta, Trisetum, Poa pratensis* and

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Festuca rubra, which towards the sea changed to salt-marsh vegetation, with *Carex glareosa, C. salina* v. *subspathacea, Glyceria Vahliana, G. vilfoidea, Stellaria humifusa* and *Arenaria ciliata.*

Klitdalen (Chr. Kruuse).

While referring to the following remarks of Hartz on the stony plains by Bielven I shall here mention those by me, partly in the company of Hartz, visited parts of the valley.

On the 2nd, 5th and 8th of August we undertook an investigation of the nearest parts of Klitdalen. Landing is effected with no difficulty on the eastern side as far as to the low range of hills (see Koch, Med. o. Grl. XXVII, p. 288). At Vargodden is water enough, but farther west large tracts become dry at low water. The stream was unnavigable, even to our flatbottomed steel pram.

The hill-range divides the valley in two different parts, a western pervaded by Ryders Elv and filled with deposits of sand and gravel, the materials of which are, for the greater part, derived from the sedimentary formations of the Jameson Land, and the eastern, which is a marine terrace, a continuation of the formations, described on p. 377, whose materials originate in the archaic mountains of the Liverpool Land and is, to a great extent, stamped by the glaciers formerly issued from its névé.

The hill-range itself belongs to the archaic side and ends this towards the west; it consists of solid rock, but this is, for the greater part, hidden under loose soils. Its southern end consisted of clayey sand sparely strown with boulders; closer to the stream was clean sand. The ground was rich in water, especially wherewer the clay was dominant, small springs were soaking the soil without, however, forming pools or brooks.

On dry spots the surface was cracked or forming small hillocks separated by a net of ditches, the bottoms of which

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lay 4—12 cm lower than the middles of the hillocks. The vegetation was found in the ditches, while the hillocks were, as a rule, bare.

On the humid clayey bottom the vegetation was heath made up of: *Cassiope tetragona, Vaccinium uliginosum, Silene acaulis*, *Pedicularis hirsuta* and *Papaver radicatum.* Less frequently were found: *Dryas octopetala*, *Cerastium alpinum v.*

Fig. 13. The border between *Casssiope-* and *Dryas*-heath. Klitdalen. (From photo. by CHR. KRUUSE).

lanatum, *Stellaria humifusa*, *Draba alpina, D. nivalis*, *D. arctica*, *Saxifraga oppositifolia*, *Pyrola grandiflora*, *Polygonum viviparum, Betula nana* and *Salix arctica* v. *groenlandica.* On the moist spots the vegetation was highly tuft-shaped, and among the heath-bushes were found:

Potentilla maculata, *Ranunculus pygmæus, Saxifraga stellaris* v. *comosa*, *S. aizoides*, *Rhododendron lapponicum, Pedicularis flammea, Juncus biglumis, Eriophorum Scheuchzeri*, *E.*

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Fig. 14. Eroded *Dryas*-tuft. In the windworn part the borders between each separate year's wear are plainly visible. Klitdalen. (From photo by CHR. KRUUSE).

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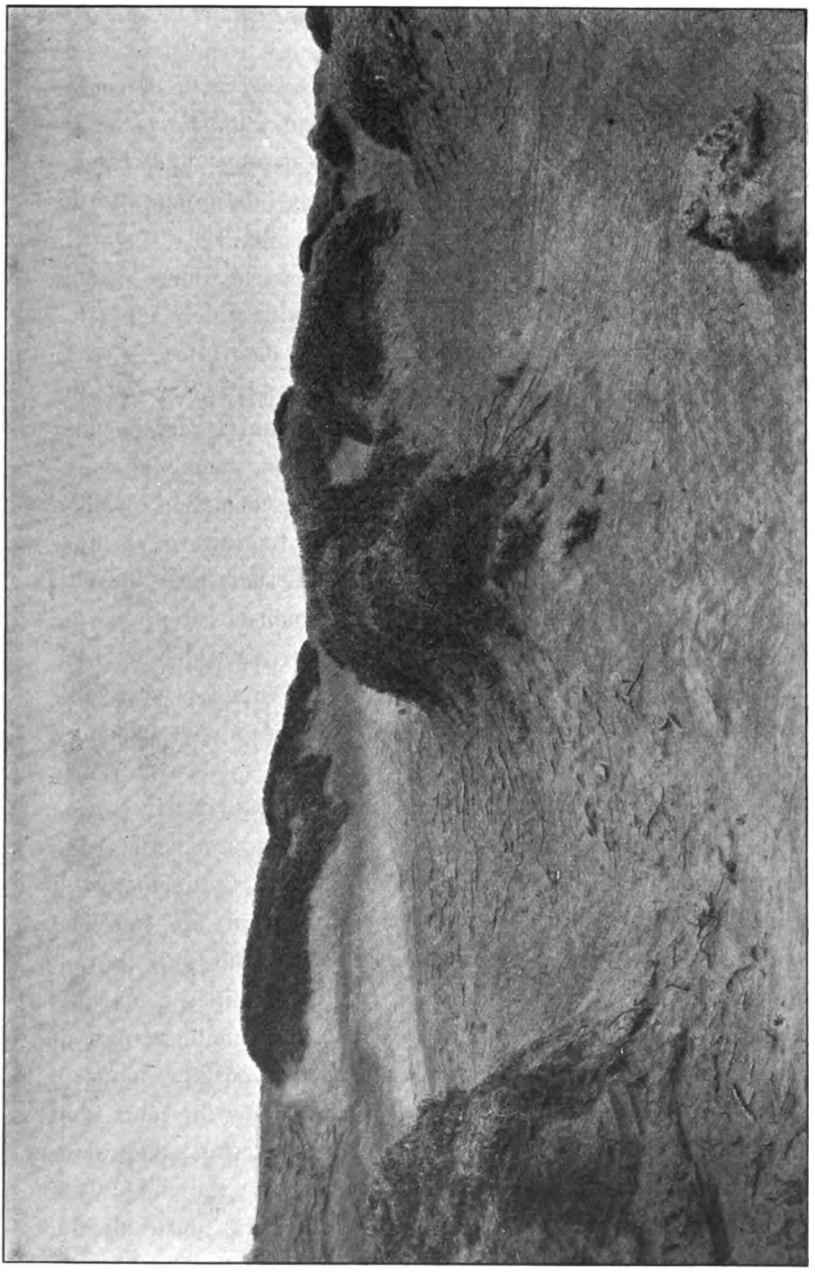

Fig. 15. Sand walls covered by *Salix* and *Chamaenerium*. In the grooves are seen roots and bits of stems denuded by erosion. Kiltdalen. (From photo by CHR. KRUUSE).

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polystachium, *Carex rigida*, *C. rariflora* and *Equisetum arvense*.

The sandy part was covered with *Dryas*-heath or rocky-flat formation with *Salix groenlandica* and *Pedicularis lapponica*. The boundary line between the *Cassiope*- and *Dryas*-heath was very sharp and went as a zigzag line upwards to the south-western corner of the range of hills (fig. 13).

The *Dryas*-heath becomes, towards north, more scarce and is followed by a rocky-flat formation with widely separated individuals, which are often very windworn (fig. 14).

Close east of the mouth of Ryders Elv on the bare, by the sea partly flooded, flat we found a very peculiar vegetation. There was here a gently arched, somewhat longish hill running parallel with the stream consisting of fine, dazzling white, almost clean quartz-sand. Its surface was furrowed by crevices of a depth of 1—2 m, and of a breadth of 2—3 m, which following the same main-direction as the stream were turning and winding, now widely and distinctly separate, now united into broad channels or round places. Between these, and separating them widely, were numerous, more or less parallel, continuous ranges of fine sand with rather steep sides. Their surfaces were covered with *Salix arctica* and *Chamænerium latifolium*, and at places, as a lesser constituent part, *Polygonum viviparum f. vulgaris* together with single tufts of *Poa pratensis* and *Festuca rubra* (fig. 15.) The willow was in fruit, whereas *Chamænerium* was still in rich flowering bestowing on the whole of the localities a magnificent, reddish-purple colour, especially on the southern part of the area, where the walls were highest and most pronounced. The sides of the walls were closely permeated with roots, and in many places these formed a protecting covering; they were, as a rule, fresh with all their bark, whereas at the ends of the walls, the roots were often stripped of the bark, and remnants of bark-bared branches were sticking out from the sand, while

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this part of the willow bushes were often dying. There was also some difference between the east side of the walls, which was, as a rule, green, and the western side, which was largely naked and eroded. Farther up the country were found similar sandy areas with *Salix*; but here the walls were not always parallel with Ryders Elv, nor did they always follow the direction of the fall of the slope; the fact is that they were always found on sloping ground, but were apparently diagonally placed.

To the north of this high sandy area the land, which is now covered by a *Dryas* rocky-flat formation, sinks down to a broad hollow by the stream, and is here, to a great extent, sparely covered with *Festuca rubra*. The lowest part formed a nearly circular spot of abt. 30 m in diameter, densely covered by *Calamagrostis neglecta* of a heigh of 25—30 cm Separate from this meadow was found along the banks of the stream and raised no more than abt. 20 cm above the surface of the latter a hydrophilous meadow, which habitually resembled a marshy meadow, the small, sharp-edged, deep, of such a meadow characteristic pools ("Lo'er", cpr. E. Wàrming: Dansk Plantevækst, I, p. 262. A. Mentz in Rambusch: Studier over Ringkøbing Fjord, p. 90) being found in great numbers. Nevertheless I should not think, although I did not take my levels, that the sea-water can force its way so far up the stream and expel the freshwater. The vegetation here consisted of a dense *Carex incurva*-cover with *Eriophorum Scheuchzeri*, *Arctagrostis latifolia*, *Hierochloa alpina*, *Stellaria humifusa* and mosses: *Polytrichum alpinum*, *Sphaerocephalus palustris*, *Meesea trichodes*, *Bryum neodamense*, *B. ventricosum*, *B. archangelicum*, *Pohlia commutata*, *P. crassidens*, *Tortula ruralis*, *Dicranum congestum*, *D. neglectum*, *Swartzia montana*, *Ceratodon purpureus*, *Amblystegium brevifolium*, *A. turgescens*, *A. Sendtneri*, *Hypnum plumosum*, *Myurella julacea*, *Isopterygium nitidum v. pulchellum*, *Odontoschisma Macounii*, *Cephalozia pleniceps*, *C. divaricata v. grimsulana*, *C. striatula*, *C. asperifolia*, *Ble-*

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pharostoma trichophyllum, *Anthelia julacea*, *Martinella Bartlingii*, *Aplozia sphærocarpa v. lurida*, *Jungermannia quinquedentata*, *J. ventricosa* and *J. inflata*.

North of this hollow was found a considerably higher area where the sand had been blown together to downs of up to 10 m height in lee of solid rocks; how much of them was sand and how much rock could not be decided with certainty, but the rocks protuding at several places in the northern and north-western sides surely occupy the greater part. The surface of the down is completely smooth, has an inclination of 10—12° towards south and is wholly bare of vegetation. The sand is loose and fine. The sun heats the surface greatly; but the warmth does not penetrate very deeply, which is shown by the under-noted observation taken on the 5th of August at noon.

	On the down	In a *Salix*-bush [1]
Black ball	24°,5	24°
Green ball	25°,5	21°
5 cm deep	15°	13°,3
55 cm deep	0°	—
The air	11°	11

Here some observations by Hartz of the temperature in a south-exposed sandy slope with loose drift sand in Klitdalen may be added; the slope was abt. 1,5 m high., and the sand was dry and warm; the moisture was reached in a depth of 15 cm, the slope was totally bare of any vegetation.

	Aug. 5th 1,20 p. m.	Aug. 5th 4 p. m.	Aug. 8th 7 p. m.
Temperature of the air	+ 8° C.	—	—
Temperature of sand, 25 cm depth	+ 8°,6 C.	9°,4 C.	9°,6 C.
— - — 35 — —	+ 8°,4 C.	8°,1 C.	8°,7 C.
Thermometer with blank ball, just covered by loose sand	+ 35° C.	—	—
In *moist* sand in small cleft at foot of sandy slope, in 4 cm depth	+ 8° C.	—	—

[1]) The bush was not very distant and had the same exposition.

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The sand was frozen in a depth of 64 cm and in a profile on the eastside, formed by a half dried up river-bed, ice was seen in a depth of 50 cm below the surface. I suppose the dune receives its increase in the autumn in the shape of a mixture of snow and sand, which thaws during the summer and dries up until the stated depth where the melting-water freezes together to solid ice. (A similar snow-and sanddrift I noticed in 1898 at Tasiusarsik kidtlek near Angmagsalik). At the base of the kiln was found, by the above-named little, somewhat mossgrown, river-bed, a small humid sandy flat covered with *Equisetum arvense* f. *decumbens, Lachnea scutellata* and, at the margin, little tufts of *Eriophorum Scheuchzeri* together with, on a small elevation, a single *Salix arctica* v. *groenlandica* bush.

To the east of the little river-bed were extensive, almost horizontal flats, which, in my journal, I call "Graa Klit"; the soil consists of stoneless, very fine argillaceous sand, which cracks in the summer drought.

They were covered with *Arctostaphylos alpina, Dryas octopetala* f. *minor, Salix arctica* f., *Elyna Bellardi* and *Carex nardina*. None of these plants rises 5 cm above the ground, most often they are covered so strongly that only a few short stem-joints together with their leaves are free; in many cases, indeed, the petioles themselves are covered. None was seen in flower, nor were there any traces of fruit-setting from previous years. They evidently wage a hard war against the dust covering and erosions of winter, all parts above ground being, as I believe, eaten away every year (fig. 16).

Near these flats are others, which I designate by the name of "Stensletter" ("stony plains", see A. Jessen in "Danmarks Geologiske Undersøgelse" I R., Nr. 3, p. 263).

These are plane or slightly undulating, almost horizontal, flats made up of sand, argillaceous sand, in spots, gravel with shells of sea mollusca, accordingly parts of a marine terrace.

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They are strown with a great number of pebbles, partly angular, flat bits of sand stone, partly water-ground, flatly oval or ovally ball-shaped blocs of archaic rocks or basalt. Some of the blocks have worn, sand-polished corners and edges, and a few have the characteristic shapes of the "triangles".

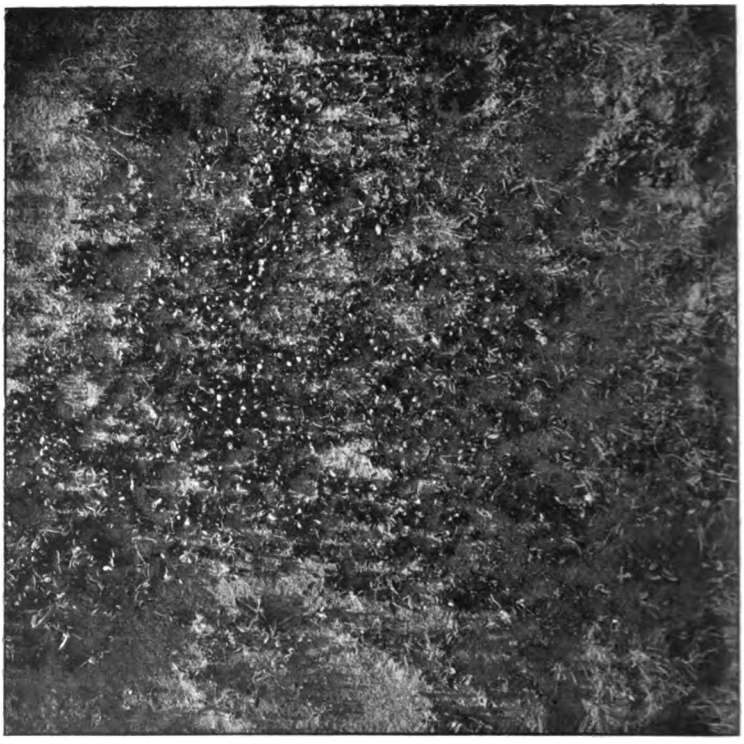

Fig. 16. *Arctostaphylos alpina* on sandy flat; only the new shoots protrude. Klitdalen. (From photo. by CHR. KRUUSE).

They most often have a thin coat of clay or ooze.

In the spring time some of the "Stensletter" are doubtless flooded for a shorter period and form extensive shallow ponds with from 10—50 cm water upon them. This period can but be of short duration; for did the flood last but a couple of months mud must be forming and rests be found of

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a Limnae-bogvegetation; but of such I have not seen any vestige. That the „Stensletter" have had water over them is, however, plainly seen in the adjacent, somewhat higher tracts of sand-drift, which towards the "Stensletter" have 10—30 cm high bluffs with distinct marks of water-erosion. The water, being so shallow, can quickly evaporate or sink into the sand, when the supply ceases. The existence of outlets with distinct watermarks I could not establish.

The vegetation on the "Stensletter" is exceedingly scarce. I noted:

Dryas octopetala f. minor and *argentea, Potentilla nivea, Chamænerium latifolium, Silene acaulis, Melandrium triflorum, Cerastium alpinum f. lanatum, Arenaria ciliata v. humifusa, Braya purpurascens, Lesquerella arctica, Arabis arenicola, Papaver radicatum, Armeria vulgaris v. sibirica, Polygonum viviparum f. alpina, Salix arctica v. groenlandica, Elyna Bellardi, Carex nardina, Trisetum subspicatum, Poa pratensis, Poa glauca v. arenaria* and *Festuca rubra.*

These are plants with a vigorous taproot and closely adpressed tuft-shaped growth or, with regard to the monocotyledons, tunicate growth. It is clear that the wind has only a limited time of display, for the hemicryptophytes (Raunkiær: Planterigets Livsformer og deres Betydning for Geografien) such as *Braya*, *Lesquerella* (fig. 17) and *Arabis arenicola* form round, hemispherical individuals showing no wind-wear whatever, although sometimes some covering with gravel. On the other hand, those which have wintering, epiterranean organs are highly injured on the north side. The monocotyledons, as a rule, manage best; they become, no doubt, rather crumpled, but they have an excellent defence in their old leaf-sheaths, which long resist the sand-wear. The dicotyledons, on the other hand, get very much injured on the north side; any stem, branch or root protruding is stripped of bark, dried up, weathered, bleached and killed. The northern side of a tuft is often an entangled

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web of branches and roots lying several cm above the worn-off soil.

The plants stand, as a rule, singly, but the bigger ligneous plants, such a *Dryas* and *Salix* yet give shelter and lee to the smaller, which, for this same reason, accompany them; thus *Chamaenerium* and *Cerastium* are hardly ever seen except

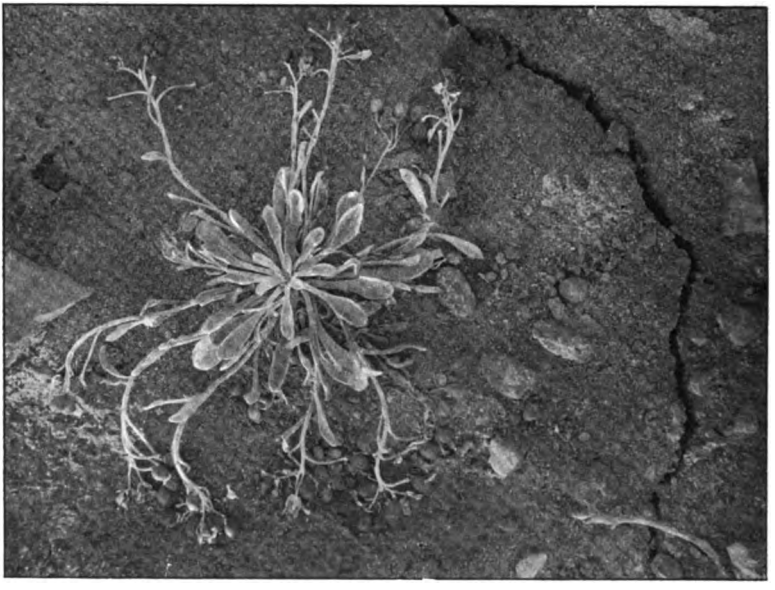

Fig. 17. *Lesquerella arctica* on stony plain. The flowering shoots erect; those fructifying decumbent. Klitdalen. (From photo. by CHR. KRUUSE).

sheltered by the willows. Yet it need not be but a small stone, arising only a few cm above the ground, which constitutes the condition of growth for an individual; indeed, I saw in one place *Arenaria ciliata* making shelter for *Potentilla nivea* (fig. 18).

In lee of each plant-tuft a small sand drift has gathered; It need not be more than 1—2 cm thick, but may very well be 15 cm in breadth and 40 cm long (the numbers corres-

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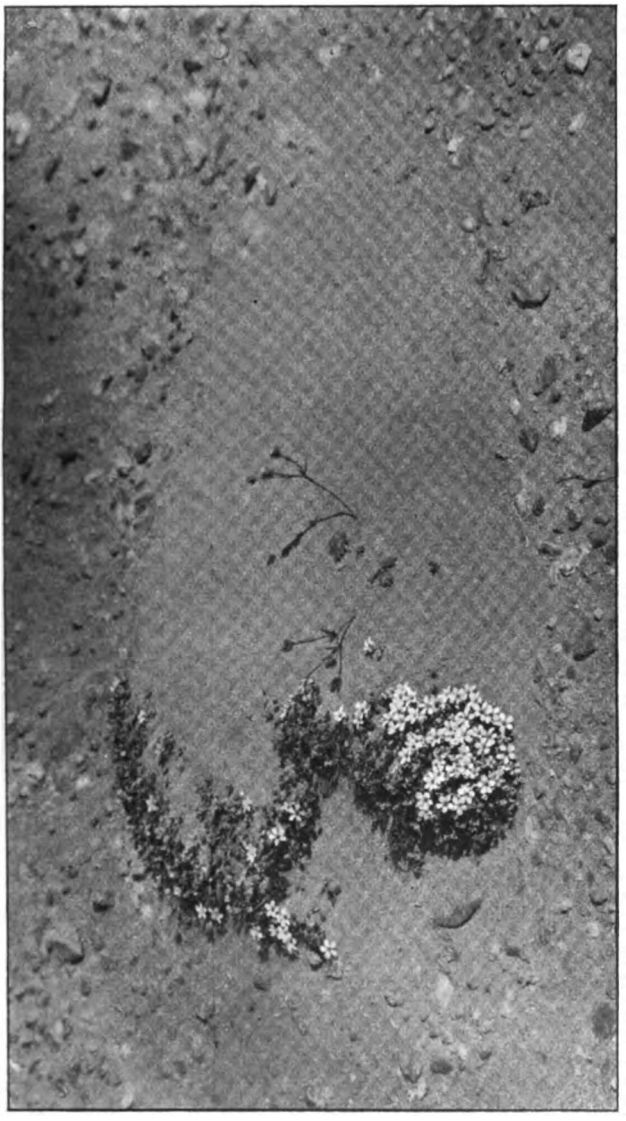

Fig. 18. *Arenaria ciliata*, in front of which a small dune with protruding *Potentilla nivea*.
(From photo. by CHR. KRUUSE).

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pond to a *Carex nardina* tuft); they may, however, measure 10—15 cm in height and upwards of 1 m in length; several are not from this year, as they have clearly been covered by water, are sometimes a little water-eroded and now and then intersected by drought cracks. The biggest sand drifts are formed by *Salix* and *Dryas*.

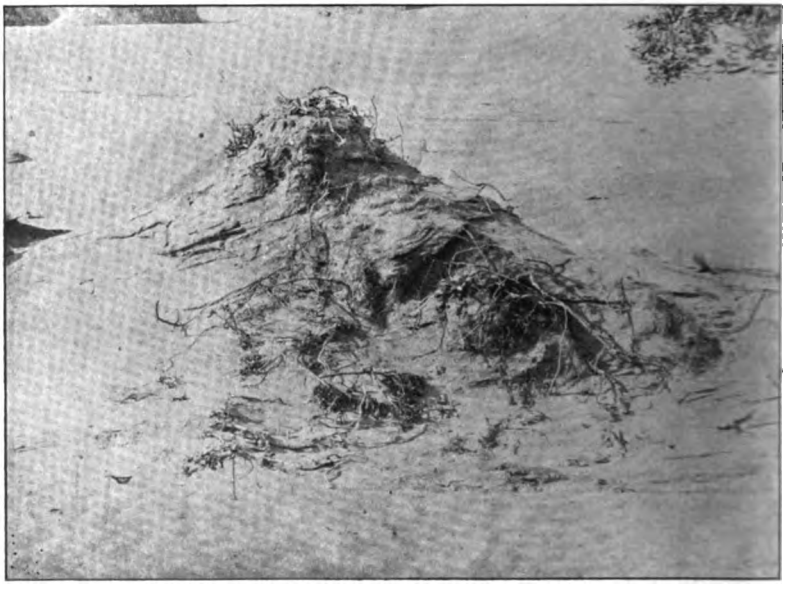

Fig. 19. Greatly demolished *Salix*-dune in front of a new sand-drift. Klitdalen. (From photo. by CHR. KRUUSE).

On the somewhat higher land environing the "Stensletter" are rather high (up to 1 m) dunes (fig. 19) around *Salix groenlandica* tufts in all stages of building up and demolition; the intervening ground is of the nature of "Stensletten", but the sand in the drifts is fine, stonefree drift sand. This is no question of any washing-out phenomenon, as there neither is any running water nor can be any considerable supply thereof.

At a still higher level are smaller flats of "living" dune sand

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Here is neither stone nor solid rock in any known depth, no more is any clay found here. The surface is uneven from little undulations and hillocks, and the sand is so loose that the foot sinks into it. It is thinly, but evenly, covered by *Festuca rubra v. arenaria*, *Carex incurva*, *Chamaenerium latifolium* and *Salix glauca*. The three firstnamed plants commonly grow

Fig. 20. Windworn *Dryas* on stony plain. Klitdalen. (From photo. by Chr. Kruuse).

in rows of a length of up to 2 m after the direction of the rhizomes, which lie in a depth of from 5 to 10 cm. The covering with sand is great, *Chamaenerium* and *Salix* only rise 2—6 cm above the sand, hardly anything but leaves is seen, seldom flower and fruit, never parts of stems. *Carex incurva* is 5—7 cm high, has curved leaves and, here and there, sheaves. *Festuca* is 10—15 cm high and has many sheaves. The whole is decidedly a purely æolian formation.

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In the angle between Ryder's River and its big tributary from the east („Bielven") the following notes were made (N. Hartz):

The stony plains ("Stensletter"). Here the sand has been blown and washed away, in such a way that the stones in the old sea-bottom form an almost complete cover on top of the under-

Fig. 21. *Dryas octopetala* with erect branches. Sand-drift grounds in Klitdalen. Del. H. Olrik.

lying sand layers. The stones themselves are more or less rounded, often highly sand-polished and shining; scattered among the stones are numerous white subfossile shells (*Saxicava, Mya, Astarte*). The chief direction of the wind in this valley is evidently N—S; in the shelter of each separate larger stone or plant lies a small sanddrift.

Farther down along the banks of the rivulet the stony plains have an extremely poor vegetation, so poor that the plants tone them with hardly any hue, and it consists here almost

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exclusively of Gramineae and Cyperaceae: *Glyceria maritima f. vilfoidea, G. distans, G. angustata, Carex incurva, Poa pratensis,* partly *f. vivipara* and some badly torn and worn tufts of *Carex nardina.*

At a somewhat longer distance from the stream grew upon the stony plains: Some tufts of *Salix groenlandica, Papaver, Draba nivalis, Armeria, Festuca rubra, Potentilla pulchella, Dryas, Braya purpurascens* and *Arabis arenicola.* The two lastmentioned species evidently thrive well on these localities, whereas most of the other species were greatly damaged by the wind; thus for instance the *Dryas*-bushes were always badly worn, with long, white, dead branches trailing flatly over the stones and the gravel.

Fig. 22. *Dryas octopetala*; part of foregoing.

Upon the large stony plains, a little farther towards the east (south of the tributary rivulet), which were furrowed by violent northern gales and intersected by spring-streamlets (now dried-up) were found, besides the above-mentioned plants some specimens of *Ranunculus glacialis, Luzula confusa, Melandrium apetalum* and *M. triflorum, Cerastium alpinum, Oxyria, Lesquerella* and *Potentilla nivea.*

Here and there a few coffin-shaped sandhills rose above the stony plain, 1—3 m long, 1/2—1 m high, evidently remnants frome rosion, preserved by the aid of the roots from the *Salix arctica-* or *Chamaenerium*-tufts which grew upon their

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tops and sides. *Stellaria longipes* once in a while grew among the *Salices* on these sandhills (Fig. 24).

Sand-drift grounds. In many places were small, low downs of white drift-sand. The "living" downs were often quite devoid of any vegetation. On flats with lively sand-drift

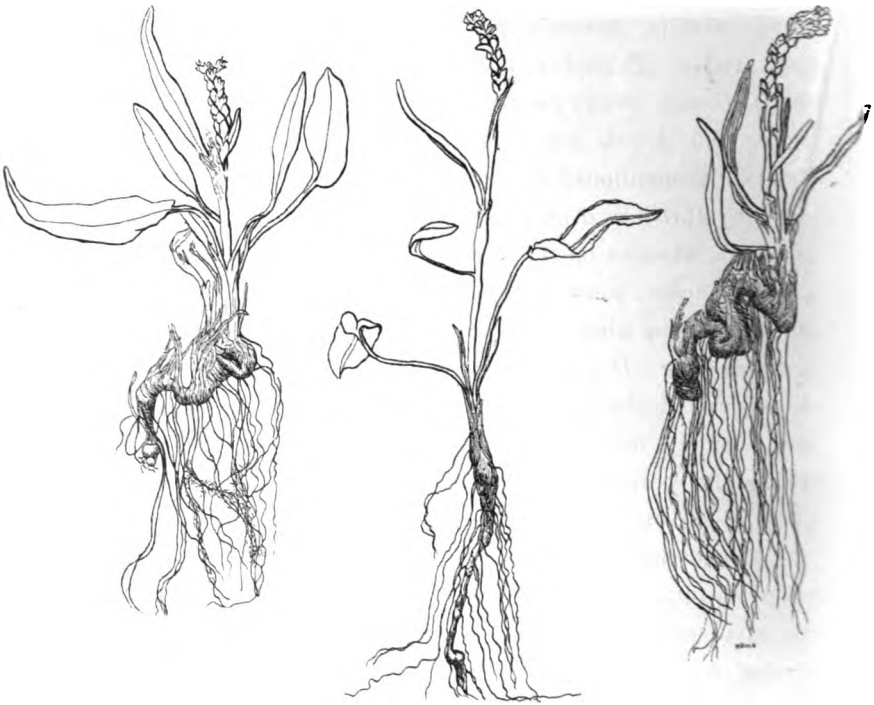

Fig. 23. *Polygonum viviparum*, sand-drift grounds. Klitdalen. Del. H. Olrik.

were noted: very luxuriant, decumbent bushes of *Salix arctica v.*, *Chamaenerium latifolium*, *Dryas* with erect branches and with only the ends of the branches above the sand (Fig. 21—22), *Polygonum viviparum*, the rhizomas of which were, in such localities, often lengthy and erect (Fig. 23), *Festuca rubra*, very vigorous, most often a form with hairy spikelets, *Arabis arenicola*, *Arenaria ciliata* (not common). Wherever the sand was a little more moist *Equisetum arvense* (the decumbent form) was

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added to the former; in humid crevices light green patches of several m² extension could be seen, the colour of which was exclusively due to this plant.

When walking upwards in the direction of southeast from the stony plains and the sand-drift grounds to the gneiss-

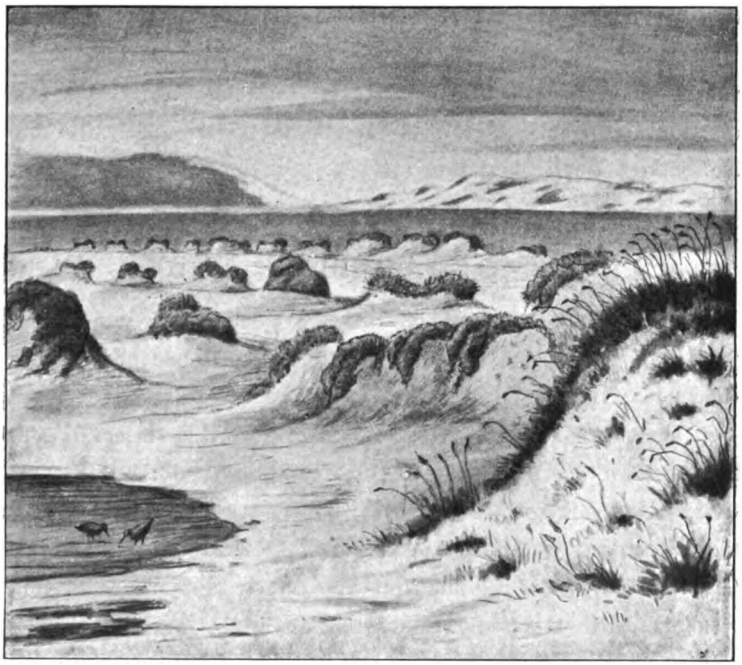

Fig. 24. Coffin-shaped sand-hills, erosion-remnants covered with *Salix* and *Chamaenerium*. In the fore-ground *Festuca rubra*. Klitdalen. Del. E. DITLEVSEN.

grounds one saw, as soon as the shelter of a knoll had been arrived at, *Dryas* and *Elyna* draw together and form a *Dryas*-heath, which at this time of the year (beginning of August) shone already in the motley colours of autumn: large wine-red blotches of *Arctostaphylos alpina*, dark green portions of *Cassiope tetragona*, yellowish-brown patches of *Empetrum, Vaccinium uliginosum* and *Betula nana*. In more humid heath

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several other herbaceous plants were added to these: *Arnica, Pedicularis hirsuta, Stellaria longipes, Armeria, Luzula spicata, Pyrola grandiflora*; mosses and lichens make out a considerable part of the *Dryas*-heath.

On the south-side of a low gneiss-knoll was a rudimental herbaceous slope. The birch rose cautiously to 1/3 m above the ground, *Taraxacum croceum* and *phymatocarpum, Alsine biflora, Draba repens* were flowering among decumbent, not yet flowering bushes of *Salix arctica v. groenlandica*, the leaves of which were not fully developed either — so lately the snow had melted away from this locality.

Point Constable (N. Hartz).

On Aug. 10th I went on a tramp across the considerable delta, which is crossfurrowed by numerous more or less considerable rivulets.

The lowest tracts were occupied by salt-marsh. The bottom here was clayey ooze, and had often a reddish tint. *Carex subspathacea* formed a dense but low "grass carpet" (4—5 cm high) with a straggling intermixture of *Stellaria humifusa* and *Glyceria vilfoidea*. Numerous irregularly shaped water-holes ("Lo'er") with steep margins 8—10 cm high, exactly as in the salt-marshes at home. Upon the bottoms of the holes, which were filled with water, lay red ochre films, below these black mud of at least 20 cm' thickness.

The surface of the salt-marsh was often slightly tufted; the small tufts were particularly vigorous specimens of *Carex subspathacea*, which would attain a height of up to 10 cm.

Inside the salt-marsh followed sand-drift grounds with a vegetation similar to the one described from Klitdalen; *Calamagrostis neglecta* and *Alopecurus alpinus*, which constituted but an unessential part of the vegetation in the sand-drift grounds of Klitdalen, were common here.

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Western and southern coasts of Jameson Land (Chr. Kruuse).

On Aug. 15th Koch, Nordenskjöld and Kruuse left in the walrus boat in order to explore and map down the southern and western coasts of Jameson Land. As mentioned by Koch (Med. o. Grl. XXVII, p. 285) this coast is low and flat, formed by marine clay and sand without solid rock. The margin of the sea consists of fine sand, upon which is found washed up seaweed mixed with sticks and leaves together with, rarely, a more considerable floating timber (see picture Koch l. c. p. 284); they form 1—3 strand lines. — A special strand vegetation is completely wanting. Inside the margin of the sea the land stands with rather steep bluffs, 2—6 metres high. Outside the margin of the sea is a broad flat (100—3000 metres), which is partially dry at low water and ends towards the inlet in a steep slope. There is 10—40 cm water upon it, the bottom is fine sand or, at places, mud; it is completely bare of vegetation.

Towards east and north-east the land rises evenly and slowly; it is nearly flat, but at rare intervals traversed by numerous brooks and streams, which have beds of 20—30 metres' depth in the loose bottom. By the coast they form river-cones; but a few of them, especially those abunding with water, ended in a little triangular lagoon, bordered towards the inlet by a convex coast-bank.

The country, by the way, corresponds well to the description which Hartz has given of its southern part (Med. o. Grl. XVIII, p. 124—132). I shall therefore only briefly mention the localities we visited, the more because bad weather and the difficulties in landing greatly limited the time we could give to the exploration.

By the landing place, on Aug. 16th close to the 71st parallel of latitude ran parallel to the coast an about 10 metres high

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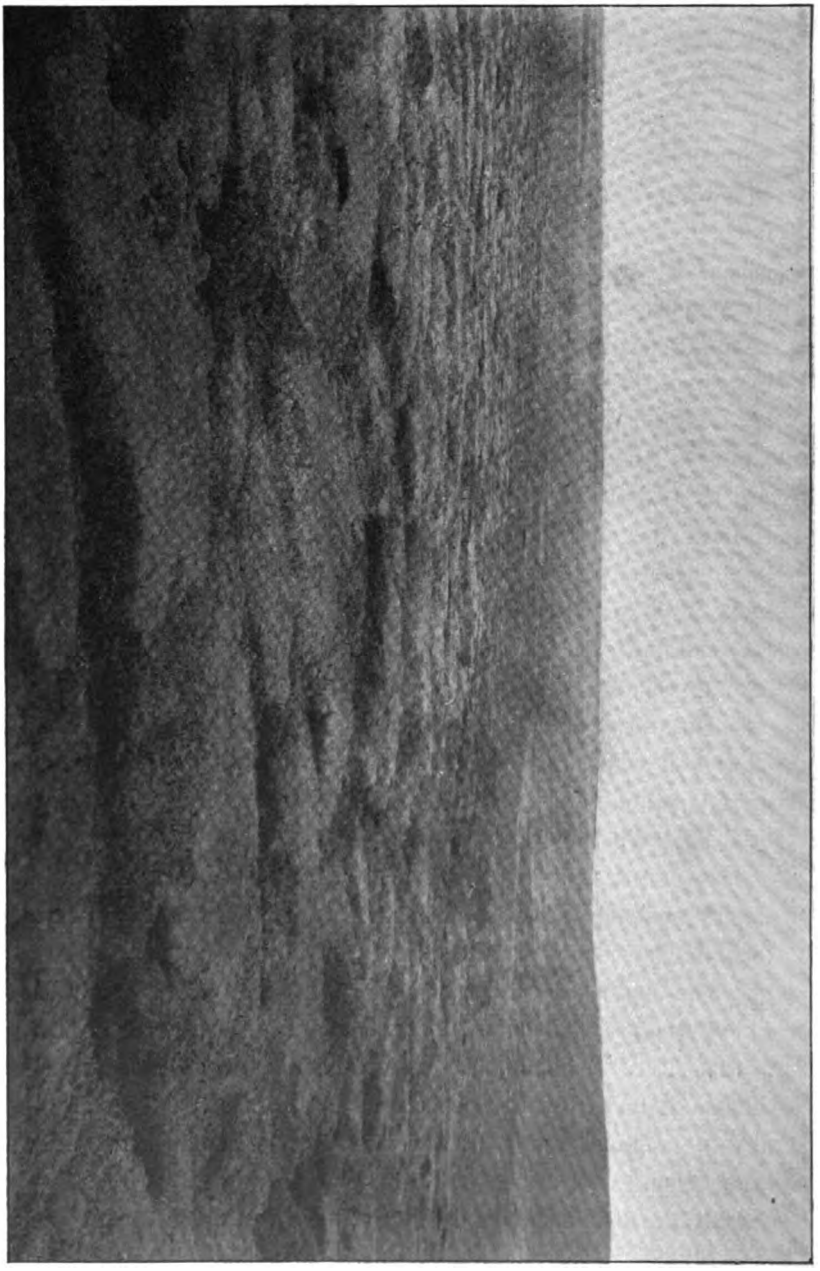

Fig. 25. Old "Rudemark" on Jameson Land. In the furrows *Cassiope tetragona* and *Dryas*. (From photo. by Chr. Kruse).

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wall, inside which was found a broad, flat riverbed, after which the land rose evenly as far as the eyesight reached. The coast-wall consisted of marine, stoneless, somewhat sandy clay, the surface of which was cracked in checks about 40 × 100 cm in size, with 4—8 cm deep furrows between ("Rudemark"). The middles of the checks were devoid of vegetation, somewhat arched (see fig. 25), somewhat granular with nut-sized rounded clumps of clay, the margins cracked, and rather washed out. In the furrows stood: *Cassiope tetragona*, *Vaccinium uliginosum*, *Dryas octopetala f. minor*, *Salix arctica v. groenlandica*, *Pedicularis hirsuta*, *Silene acaulis*, *Polygonum viviparum*, and *Carex nardina*. All of them were low, somewhat lichenized and hardly reaching above the checks.

In the flat river-bed inside the wall water was only found in a pool, but after digging I found it everywhere in a depth of 10—30 cm below the even sand-bottom, which was only very thinly covered with *Equisetum arvense f. decumbens*, whose up to 15 cm long thin stems are half buried in the sand. The bank of the riverbed up to its uppermost edge is covered with *Eriophorum Scheuchzeri*, which at the bottom, although powerful and tickly tufted, is sterile, whereas the higher placed individuals have innumerable white fruit-tassels.

Within the low grounds, on the gently rising bottom, are found wide heather-moors made up of *Cassiope tetragona* and *Salix arctica v. groenlandica*. *Cassiope* is dominant, is tickly tufted, and 8—10 cm high. *Salix* is more scattered, is adpressed to the ground, 4—5 cm high, and somewhat surrounded by lichens. Besides were noted in small numbers: *Saxifraga decipiens*, *S. hieracifolia*, *Polygonum viviparum*, *Oxyria digyna* and *Luzula confusa*.

On the heath were found a few feebly depressed hollows with moist bottoms covered with *Amblystegia* and *Cardamine pratensis*, *Eriophorum Scheuchzeri*, and *Equisetum arvense f.*

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decumbens; but otherwise the heath stretched unaltered for several square miles.

Our next tent-place by "Vandreblokken" was not reached till after a long row in rainy weather and night-quarters in the boat, as we could not land on account of low water. The bluff towards the sea was here 2—5 m high, it consists of marine clay with numerous shells of *Mya, Astarte, Saxicava* and other arctic mussels. It is greatly intersected by clefts, formed by streamlets which, during our visit, were nearly all dried up; but their bottoms were however moist, and the ground water was found in from 5 to 10 centimetres' depth. They are covered with scattered mosses, amongst which were noted: *Pohlia cruda, Tortula ruralis, Amblystegia, Anthelia julacea, Philonotis fontana,* and *Sphagnum teres.* Of vascular plants were found *Silene acaulis, Saxifraga cernua, Oxyria digyna, Carex lagopina, Trisetum subspicatum, Poa alpina f. vivipara,* and, in great numbers, *Equisetum arvense v. boreale,* which, although decumbent, is very powerful and thick-stemmed. Up the loamy soaked slopes stood besides the above-mentioned: *Phippsia algida, Poa* sp. and *Festuca rubra.*

In the small rainclefts the vegetation was a little less scattered and richer in dicotyledons. Here stood: *Sagina nivalis, Ranunculus pygmæus, Cerastium alpinum, Saxifraga cernua, Erigeron uniflorus, Oxyria digyna, Salix arctica v. groenlandica, Poa alpina f. vivipara, Poa pratensis, Glyceria angustata, G. vilfoidea,* and *Equisetum arvense.*

The surface of the land between the clefts is more sandy owing to washing out, and here are found *Cassiope* and *Vaccinium* half covered by sand, so that only branchends from 3 to 6 cm long stick out; there are great intervals between the tufts, wherever the sand is completely bare. Farther up the country the sand-drift stops, and the heath is dense, luxuriant and 10 cm high.

The sand beach is totally devoid of vegetation as well as

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the shallow water without, but washed ashore upon the sand was one specimen of a narrow-leaved *Zostera marina*; notwithstanding an eager search I didn't succeed in finding any more, nor did I find the plant growing anywhere. Although the "Antarctic" passed the spot twice and we ourselves in the boat once, it is little likely that it comes from here, the more because it was not single leaves which might have been used in packing, but a specimen with parts of stems. I therefore think it probable that the plant grows somewhere in Scoresby Sund in small numbers.

Again we had, in order to come ashore close west of Cape Hooker, to pass half the night in the boat away on the shallow, which is a very disagreeable thing to do in rainy weather, and not until about 3 o'clock did we get ashore and got our tent pitched against the rain. The ground around this tent place was considerably more barren than that surrounding "Vandreblokken", and it corresponds peculiarly well to the description which Hartz has given (Med. o. Grl. XVIII, p. 126—132).

Here was found mossfield on clay, principally *Anthelia*-covering with *Peltigera aptosa*, *Silene acaulis*, *Cassiope hypnoides*, *Oxyria digyna*, *Salix herbacea*, *Salix arctica*, *Luzula confusa*, *Carex lugopina*, *Trisetum subspicatum*, *Poa alpina f. vivipara*, *Festuca ovina* and in single patches *Festuca rubra*. All were low and stunted. Alternating with these was *Cassiope*-heath of 5 cm height, stony plains without any vegetation, and sandflats with lichen covering or a thin growth of *Polytrichum juniperinum*, *Luzula confusa*, *Trisetum*, *Oxyria*, *Salix arctica v. groenlandica*, *Cerastium alpinum*, and *Equisetum arvense*; all dwarfed.

Wherever the heath, which besides *Cassiope* consisted of *Empetrum*, *Arctostaphylos alpina*, *Vaccinium*, and *Salix arctica v. groenlandica*, was adjacent to the stony and sandy plains it was dissolved into separate tufts with bare sand between, and beyond

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its margin were seen remnants of the bushes. Thus I saw in one place a *Salix* which, though yet alive, had its root naked in a length of 156 cm.

It was absolutely evident that the wind broke up the surface and destroyed the heath so that this tract of land in the course of a few years will acquire a similar appearance to that of the above-mentioned stony plains in Klitdalen. The prevalent wind here, as there, was northern, and the destruction especially advanced in the direction from west to east.

Farther up the country the heath became much more luxuriant, up to from 10 to 15 cm high, and consisted, besides the above-mentioned, of *Luzula confusa, L. spicata, Poa pratensis, P. alpina, Silene acaulis, Saxifraga oppositifolia, Pedicularis hirsuta, Erigeron uniflorus,* and *Betula nana.* The sides of the river-valleys, which were here strewn with blocks of ammonite-sandstone, were abundantly covered by *Vaccinium* and *Betula*, and the bottom of the valley with a covering of *Equisetum arvense,* amongst which were scattered *Oxyria, Cerastium trigynum,* and *Koenigia.*

List of all the vascular plants hitherto known from Scoresby Sund[1]).

Dryas octopetala.
— —* *integrifolia.*
Potentilla pulchella.
— *maculata.*
— *emarginata.*
— *nivea.*
Silbaldia procumbens.
Alchimilla glomerulans
Hippuris vulgaris.
Callitriche verna v. minima.
Epilobium anagallidifolium.
Chamænerium latifolium.
Empetrum nigrum.
Silene acaulis.
Viscaria alpina
Melandrium apetalum.
— *involucratum v.*
— *triflorum.*
Sagina Linnæi.
— *nivalis.*
Alsine biflora.
— *stricta.*

[1]) cpr. N. Hartz, Medd. om Grønland, XVIII. 1905.

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Alsine verna.
Halianthus peploides v. diffusa.
Arenaria ciliata v. humifusa.
Stellaria longipes.
— *humifusa.*
Cerastium trigynum.
— *alpinum.*
Lesquerella arctica.
Cochlearia officinalis v.
Draba alpina.
— *crassifolia.*
— *aurea.*
— *repens.*
— *nivalis.*
— *Fladnizensis.*
— *hirta.*
— *arctica.*
Braya purpurascens.
— *alpina.*
Cardamine bellidifolia.
— *pratensis.*
Arabis alpina.
— *Holboellii.*
— *arenicola.*
Papaver radicatum.
Thalictrum alpinum.
Batrachium paucistamineum v. eradicata.
Ranunculus glacialis.
— *pygmæus.*
— *hyperboreus.*
— *nivalis.*
Ranunculus altaicus.
— *arcticus.*
Saxifraga hieracifolia.
— *nivalis.*
— *stellaris v. comosa.*
— *cernua.*
— *rivularis.*
— *decipiens.*
— *tricuspidata.*
— *aizoides.*
— *Aizoon f. brevifolia.*
— *oppositifolia.*
Sedum Rhodiola.
Armeria vulgaris v. sibirica.
Pinguicula vulgaris.
Veronica alpina.
— *saxatilis.*
Pedicularis lapponica.
— *flammea.*
— *hirsuta.*
Euphrasia latifolia.
Gentiana tenella.
Diapensia lapponica.
Pyrola rotundifolia v. grandiflora.
Arctostaphylos alpina.
Phyllodoce coerulea.
Cassiope tetragona.
— *hypnoides.*
Rhododendron lapponicum.
Vaccinium uliginosum.
Campanula uniflora.
— *rotundifolia.*
Taraxacum phymatocarpum.
— *croceum.*
Hieracium alpinum.

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Antennaria alpina.
Erigeron compositus.
— *uniflorus.*
Arnica alpina.
Koenigia islandica.
Polygonum viviparum.
Oxyria digyna.
Rumex acetosella.
Salix herbacea.
— *arctica.*
— *glauca.*
Betula nana.
Tofieldia palustris.
— *coccinea.*
Juncus biglumis.
— *triglumis.*
— *castaneus.*
— *trifidus.*
— *arcticus.*
Luzula multiflora.
— *arcuata v. confusa.*
— *spicata.*
— *nivalis.*
Eriophorum Scheuchzeri.
— *polystachium.*
Elyna Bellardi.
Kobresia bipartita.
Carex nardina.
— *dioica v. parellela.*
— *ursina.*
— *scirpoidea.*
— *microglochin.*
— *rupestris.*
— *incurva.*
Carex Maclowiana.
— *lagopina.*
— *alpina.*
— *misandra.*
— *glareosa.*
— *bicolor.*
— *salina f. subspathacea.*
— *rigida.*
— *capillaris.*
— *rariflora.*
— *pedata.*
— *supina.*
— *rotundata.*
— *pulla.*
Alopecurus alpinus.
Hierochloa alpina.
Agrostis borealis.
Calamagrostis arundinacea.
— *neglecta.*
Trisetum subspicatum.
Pleuropogon Sabinei.
Phippsia algida.
Arctagrostis latifolia.
Glyceria distans.
— *maritima v. vilfoidea.*
— *angustata.*
— *Vahliana.*
Poa abbreviata.
— *glauca.*
— *nemoralis var.*
— *alpina.*
— *pratensis.*
— *cenisia.*
Festuca ovina.

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Festuca rubra v. arenaria.
Lycopodium alpinum.
— *Selago v. appressa.*
— *annotinum v. pungens.*
Aspidium fragrans.
Cystopteris fragilis.
Woodsia ilvensis.
— *hyperborea.*
— *glabella.*
Botrychium Lunaria.
Equisetum arvense.
— *variegatum.*

On August 22nd we left Scoresby Sund; after a short visit to Cape Greg on the east coast of Liverpool Land on Aug. 23rd, and to Cape Brown in the mouth of Fleming Inlet on August 24th, we made a longer visit to Fleming Inlet, Aug. 25th—26th.

Cape Brown (Chr. Kruuse).

On August 24th we landed at Cape Brown, where the foot of the mountain consisted mostly of barren débris. Yet a little stream had cut itself a narrow and deep cleft in the rock, and through it I went up the mountain. The rocks are highly ice-ground and almost without any loose soils and, accordingly, nearly devoid of continuous higher vegetation. Here and there, however, in the cleft of the stream a little sand had formed, and thanks to the avantages of shelter and with abundant humidity the plants were thriving surprisingly well. I noted during an ascent of about 300 m:

Dryas octopetala f. minor, Chamænerium latifolium, Silene acaulis, Arenaria ciliata, Alsine biflora (partly flor. lilacinis), *A. verna v. propinqua, Melandrium involucratum v. affine, Cerastium alpinum f. lanatum, Draba alpina, D. nivalis, D. Fladnizensis, D. arctica, Papaver radicatum, Saxifraga decipiens, S. cernua, S. oppositifolia, Pedicularis flammea, Cassiope tetragona, Vaccinium uliginosum, Rhododendron lapponicum, Campanula rotundifolia, Oxyria digyna, Salix arctica, Luzula confusa, Carex nardina, Poa glauca, P. pratensis, P. cenisia, Festuca ovina, Cystopteris fragilis* and *Woodsia ilvensis.*

In moist crevices *Philonotis fontana* formed large light green cushions, and on the rocks sat here and there *Hypnum trichodes.*

Above the cleft was at little valley-bottom thinly dotted with small tufts of *Grimmia apocarpa,* and also, more rarely, *Cetraria nivalis* and *Stereocaulon denudatum.*

Fleming Inlet.

Cape Seaforth, Ørsted's Valley (N. Hartz).

On the 25th of August I made an excursion up trough the abt. 7 km broad Ørsted's Valley, which follows the direction SW-NE, traversed by a broad and watery stream with large delta formations at the outlet. On the previous evening a strong Föhnwind kept blowing out the valley carrying along with it large quantities of dust away over the inlet; viewed from some distance it looked quite like an advancing fogbank.

On this day it was clear sunshine with a feeble breeze from SW; in spite of the advanced time of the year a few gnats and *Argynnis* were, however, seen. The valley evidently is a favoured spot for large numbers of geese; numerous excrements of geese lay scattered everywhere in the bogs: these were often filled with the undigested remnants of axillary bulbs of *Polygonum viviparum.* Away in a moist moss-bog lay close by a small pool of water a big "goose tuft" abt. 10 m^2 and 1 m high (frozen in a depth of 25 cm) formed chiefly by vigorous *Aulacomnium palustre*; amongst the mosses grew luxuriant specimens of *Festuca rubra, Stellaria longipes* and *Marchantia polymorpha.* A great many excrements and feathers of geese upon the tuft.

At Cape Seaforth itself was found *Saxifraga oppositifolia* var. *Nathorsti,* a very peculiar and characteristic form, conspicuous at first sight on account of the pale-redviolet or fleshycoloured hue of its corolla. You think at first that

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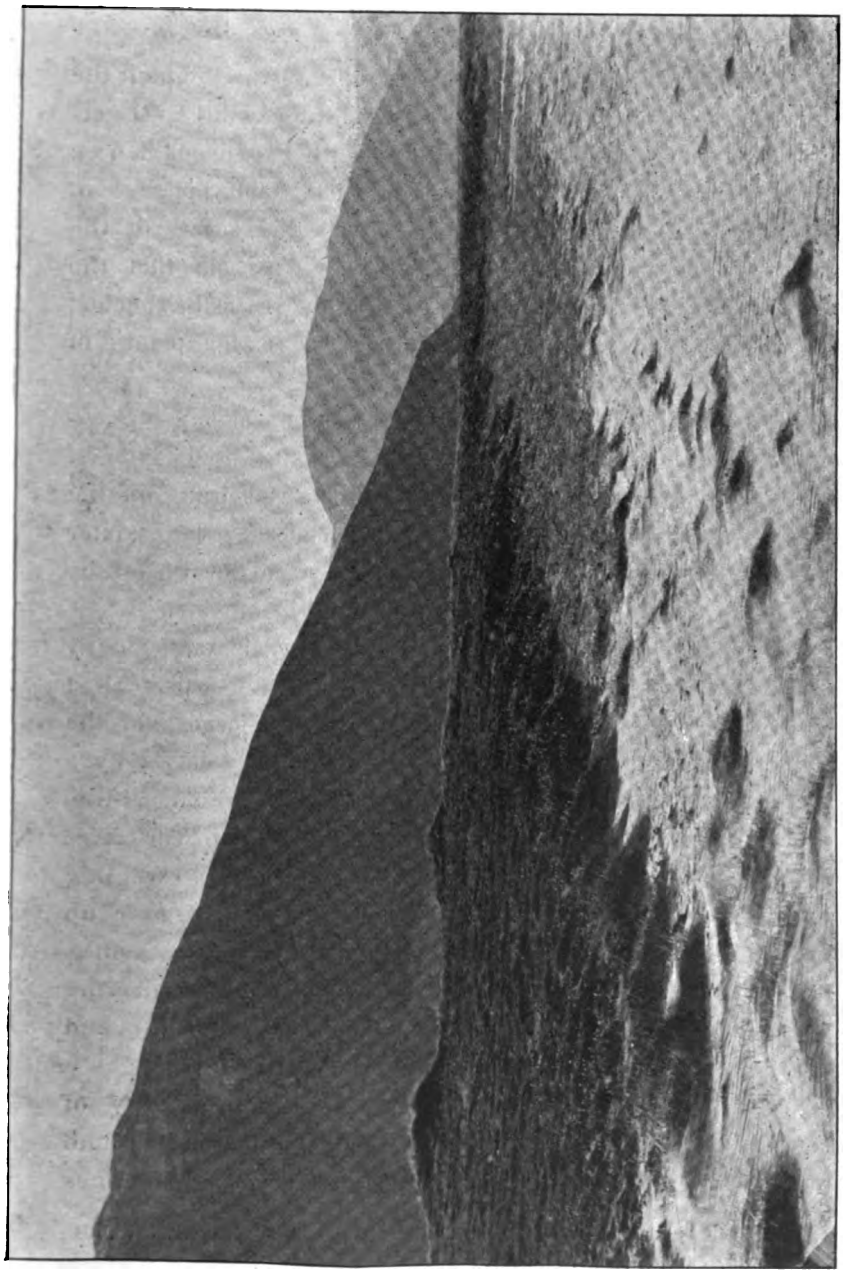

Fig. 27. The valley at Cape Seaforth. To the left *Dryas*-heath with steep declivity towards the sandy flat where little dunes form round *Festuca rubra*. (From photo. by CHR. KRUUSE).

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you have a bastard of *Saxifraga oppositifolia* and *S. aizoides* before you.

This variety has been described by P. Dusén[1]) upon the specimens found in 1899 by A. G. Nathorst and K. A. Gredin at 7 divers localities in the Frantz Joseph Fjord and Kong Oscar Fjord, and Dusén gives both good habit pictures of the form and analyses of leaves, corollas and sepals of the main species and of the variety. Dusén points out that the late flowering is striking in the variety, while the main species, as known, belongs to the earliest flowering spring plants of Greenland and altogether of the whole arctic Zone.

We found numerous specimens growing amongst *Saxifraga oppositifolia* and *S. aizoides* on a low sanded moist bottom near the beach, but did not see any ripe fruits on the plant. Specimens, brought alive to Copenhagen have later flowered every year in the Botanical Gardens of the University and have kept constant, although somewhat luxuriating.

The valley was covered by considerable alluvial layers, mostly sand, and cross-furrowed by abandoned, dry river-beds. Most likely the valley-bottom is a "postglacial" river-deposit in the former inlet, the mouth of which has been partly closed by a reef formed by a basalt-stock; remnants of this still showed projecting rocks at and close outside the beach. The river carries enormous quantities of sand along with it, and excepting only the foot of the mountain the valley-bottom was made up everywhere of fine sand without stones. Nearest the mountain-foot were stones and stony clay, moraine or weathering product. The river had such an abundance of water and the current was so strong that it could not be waded.

Farther up the valley was an excellent opportunity of studying the marked influence of the height of the underground water, which asserted itself at rather inconsiderable differences

[1]) Zur Kentnis d. Gefässpfl. Ostgrönland. Bih. t. k. sv. Vet. Akad. Handl., Bd. 27. Afd. III. Nr. 3, 1901.

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of elevation of the ground, and which is illustrated by the diagrammatic section of part of the valley.

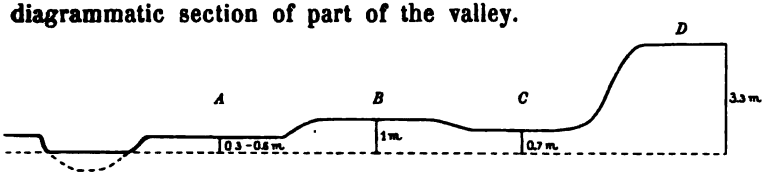

Fig. 26. Diagrammatic section of Ørsted's Valley. Cape Seaforth. Fleming Inlet.

A: 0,3—0,6 m above the river. Decumbent *Salix arctica* (and *Silene acaulis*).

B: 1 m above the river. *Dryas octopetala* (and *Polygonum viviparum*).

C: 0,3 m lower than B (Dry abandoned river-bed). *Calamagrostis neglecta*-meadow with *Carex pulla, Eriophora, Equisetum arvense, Cardamine pratensis, Juncus arcticus.*

D: 2,6 m higher than C. Heath, formed by *Cassiope tetragona* with *Dryas octopetala.*

ad C. Besides the meadow was found here a tract of loose, almost bare sand with wave-lines perpendicular to the main direction of the valley, made by the wind. Here were seen single tufts of *Festuca rubra, Eriophorum Scheuchzeri, Carex incurva* and *Juncus arcticus,* which had each collected a small abt. 5—10 cm high drift of fine sand between the straws and sheltered on the eastside.

Here and there were small downs covered with *Carex incurva* and *Juncus arcticus*; on the north-side of the valley were seen considerably bigger downs, which were not reached. When later in the day a strong breeze set in from the sea large dustclouds were seen on the northside of the valley.

The divers vegetations gave different hues to the different localities, the localities covered by decumbent *Salix arctica* displaying a deep green shade (A), the *Dryas*-heath a reddish brown (B) and the *Cassiope*-heath a dark brown (D).

In the *Calamagrostis*-meadow was found *Cardamine pratensis* in flower.

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Ørsted's Valley (Chr. Kruuse).

Close inside the beach was a low flat, which had evidently been covered by water at an earlier time of the year. It was covered with a dense carpet of mosses, liverworts and algae, amongst which *Chomocarpon commutatus, Sauteria alpina* and, chiefly, *Marchantia polymorpha v. alpestris* were prevalent. In the mosscover stood with abt. 30 cm' interval a great many 1—5 cm tall, hemispherical tufts of phanerogams, which were made to stand out greatly by the dark, one-coloured bottom. Here were noted:

Dryas octopetala f. minor, Silena acaulis, Sagina Linaei, Alsina biflora, A. verna v. rubella, Arenaria ciliata, Stellaria humifusa, Cerastium alpinum, Cochlearia officinales v. groenlandica f. minor, Draba alpina, D. Fladnizensis, Braya purpurascens, Cardamine bellidifolia, Saxifraga oppositifolia f. pulvinata, S. oppositifolia v. Nathorsti, S. aizoides, S. cernua, Ranunculus altaicus, R. nivalis, R. pygmæus, Pedicularis hirsuta, Koenigia islandica, Polygonum viviparum f. alpinum, Oxyria digyna, Salix arctica, Luzula confusa, Juncus biglumis, Poa alpina, Glyceria vilfoidea, Carex incurva, C. salina v. subspathacea, Equisetum arvense and *variegatum f. anceps.*

Pingel's Valley (N. Hartz).

Aug. 26th. In Pingel's valley, which stretches from the south-eastern corner of Fleming Inlet in about easterly direction I found a somewhat more luxuriant vegetation than in Ørsted's valley, more vigorous heath (*Cassiope tetragona*) and herby slopes, with fresh green grasses and herbs, and a thick, black mould-layer, probably abt. 6—7 km from the beach. Here were found in several small moist clefts traversed by brooks the following plants: *Botrychium lunaria, Veronica alpina, Sibbaldia procumbens, Thalictrum alpinum, Euphrasia latifolia.*

The four first-mentioned: *Botrychium, Veronica, Sibbaldia*

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and *Thalictrum* have here their northernmost known habitats on the east-coast.

The valley in the south-western corner of Fleming Inlet (Chr. Kruuse).

On Aug. 26th Deichmann and I landed in the broad valley which shoots inland from the head of the inlet towards northwest. Through the valley flows a goodly stream, which has cut out in the bottom of the valley a cleft of up to 7 metres' depth, and which at the spot where it enters the inlet forms an enormous river-cone of débris crossed by delta arms and strewn with rocks and waterground stones. These are found arranged in walls, 50—200 cm high, which radiate fanshape from the mouth of the river; between the walls are hollows with no vegetation, but often strewn with sticks and fragments of plants. The whole of the cone of débris is evidently relaid every spring, and only the heaviest blocks are allowed to remain undisturbed. Upon the walls *Chamænerium latifolium* formed a magnificent red 25 cm high cover, in which were noted: *Sagina nivalis*, *Cerastium alpinum*, *Arabis alpina*, *Koenigia islandica*, *Oxyria digyna*, *Poa alpina*, *Festuca rubra* and *Phippsia algida*.

The bottom of the valley lies about 30 metres above the level of the sea, and up to it leads a rather steep south-exposed slope covered with herbaceous plants, which formed a luxuriant, 5—15 cm high, fresh green cover. Here were noted: *Potentilla maculata*, *P. nivea*, *Sibbaldia procumbens*, *Silene acaulis*, *Sagina nivalis*, *Alsine biflora*, *Cerastium alpinum*, *C. trigynum*, *Draba hirta*, *D. alpina*, *Arabis alpina*, *Thalictrum alpinum*, *Saxifraga cernua*, *S. nivalis*, *S. hieracifolia*, *S. decipiens*, *S. rivularis*, *S. oppositifolia f. reptans*, *Veronica alpina*, *Antennaria alpina f. glabrata*, *Erigeron uniflorus*, *Taraxacum croceum*, *T. phymatocarpum*, *Polygonum viviparum*, *Oxyria digyna*, *Salix herbacea*, *Salix groenlandica*, *Trisetum subspicatum*, *Festuca rubra*, *Poa alpina*, *Poa cenisia*,

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Luzula confusa, Carex scirpoidea, C. rigida, C. incurva, Juncus biglumis, Eriophorum Scheuchzeri, Ranunculus nivalis, R. altaicus, R. pygmæus f. Langeana, Campanula rotundifolia and *Woodsia glabella.*

The top of the slope was covered by a high, luxuriant heather-moor made up of: *Dryas octopetala, Cassiope tetragona, Vaccinium uliginosum, Arctostaphylos alpina* and *Betula nana*, all with ripe fruit. Amongst them grew in lesser numbers: *Empetrum nigrum, Alsine biflora, Cerastium alpinum, Papaver radicatum, Saxifraga oppositifolia, Pedicularis hirsuta, Pyrola grandiflora, Arnica alpina, Luzula confusa, Carex nardina* and *Poa alpina.*

At spots where earlier in the summer had been springs were found covers of *Philonotis fontana* and small spots of *Leersia affinis, Chomocarpon commutatus, Cephalozia bicuspidata v. cavifolia, Blepharostoma trichophylla, Jungermannia quinquedentata, J. elongata* and its *f. alpestris.*

The bottom of the valley was very poor rocky-flat formation thinly covered with mosses (*Pohlia spp., Anthelia, Grimmiae*) and lichens, and with very few phanerogams, among which *Silene acaulis, Salix arctica, Luzula confusa,* and *Carex rigida* were the most prominent. It was striped by wild brooks and strewn with flat stones, among which numerous lemmings had their burrows. The hound JEANETTE indicated with certainty which holes were inhabited, and digging out 30 burrows we managed to capture 13 living animals.

Forsblads Fjord.

Polhem's Valley (N. Hartz). On the 28th of Aug. we went ashore for some few hours' stay at Polhem's Valley on the north side of the river. Here was found vigorous, now much desiccated heath of a dark-brown shade made up as usually by *Cassiope tetragona.*

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On a dry southern slope, built up of hard quartzitic schists without any mould was found the xerophile coppice vegetation formerly described by me from the inmost ramifications of Scoresby Sund. All the vegetation was utterly dried up; large fine carpets of *Betula nana, Salix arctica* var. *groenlandica, Vaccinium uliginosum, Rhododendron lapponicum, Arctostaphylos alpina* and *Empetrum nigrum.* The birch-trunks were up to 1,5 cm thick, 50—100 cm long and rose up to 25 cm above the ground. Besides the common big, tuftshaped gramineæ in gigantic specimens were found: *Calamagrostis arundinacea, Festuca rubra* var. *arenaria, Poa alpina* and a great many other herbaceous plants e. g. *Campanula rotundifolia* richly flowering, *Tofieldia coccinea* (which was found already at Forsblads Fjord by Nathorst) partly with white flowers, *Lesquerella arctica, Rumex acetosella, Melandrium affine, M. triflorum, Silene acaulis, Draba alpina, Saxifraga nivalis, S. hieracifolia, Pedicularis lapponica, P. flammea, P. hirsuta, Arnica alpina, Elyna Bellardi, Carex nardina, Hierochloa alpina, Trisetum subspicatum, Poa glauca* and *Cystopteris fragilis*, fully corresponding to Duséns' description of the copses (Gebüsch or Gestrüpp) of Kjerulfs Fjord.

Here were exquisitely fine, marine, clayey and sandy terraces; on the clayey flats were often seen large spots devoid of vegetation. I wonder whether presence of sodic chloride here hinders the forthcoming of vegetation (cf. my observations on the south-coasts of Jameson Land (Medd. om Grønland, XVIII, p. 130). On a gravelly marine terrace-flat abt. 50 m above the level of the sea grew *Dryas octopetala *integrifolia*, a rare plant in these regions of Greenland.

Outside the valley was a small narrow lagune with a low clayey-sandy wall on which grew *Halianthus* and *Stellaria humifusa.* On the beach numerous specimens of *Fucus* were thrown ashore.

Further up the inlet we landed for a few hours' stay

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on Aug. 29th; here was a low *Betula nana* coppice (or perhaps rather *Betula nana* heath) with numerous powerful specimens of *Elyna Bellardi* and other tall, graminaceous plants: *Calamagrostis arundinacea, Poa glauca, Carex nardina, Aira caespitosa f. alpina, Trisetum subspicatum, Festuca rubra* and fruitbearing *Vaccinium uliginosum*, a rather luxuriant, but very uniform vegetation.

At Kingua in Forsblads Fjord we stayed from the evening of August 29th to the next day at noon; we had our tent-place for the night at the very head of the inlet. The temperature of the air at nine o'clock in the evening was still 9° C. The vegetation here was powerful and well developed, but very little peculiar, namely *Cassiope*-heath and *Carex*-bog.

Here were found *Pedicularis lapponica* and *Tofieldia palustris*. Considerable ice-free land was found between the inland-ice and Kingua of the inlet.

Canning Land (Chr. Kruuse).

On Sept. 1st we landed on Canning Land in the vicinity of Cape Fletcher. The mountains are steep and, in long tracts of land, descend vertically into the ocean without any mountain foot, but outside a pass were found huge cones of débris. Weathering and frost-bursting are quick, and the light eruptive rocks which formed the pass and the mountains to the east of this were greatly corroded. The bottom is not very stabile, and is at present lacking moisture. The sea margin is made up of rolled blocks the size of a human head; there was no strand-vegetation except in the shelter of a couple of mighty blocks, where *Halianthus peploides* and *Stellaria humifusa* had found needful space.

On the débris-heaps were found only here and there spots of 1—2 m^2 with continuous vegetation, or a single individual sticking out between the blocks. I collected the species enume-

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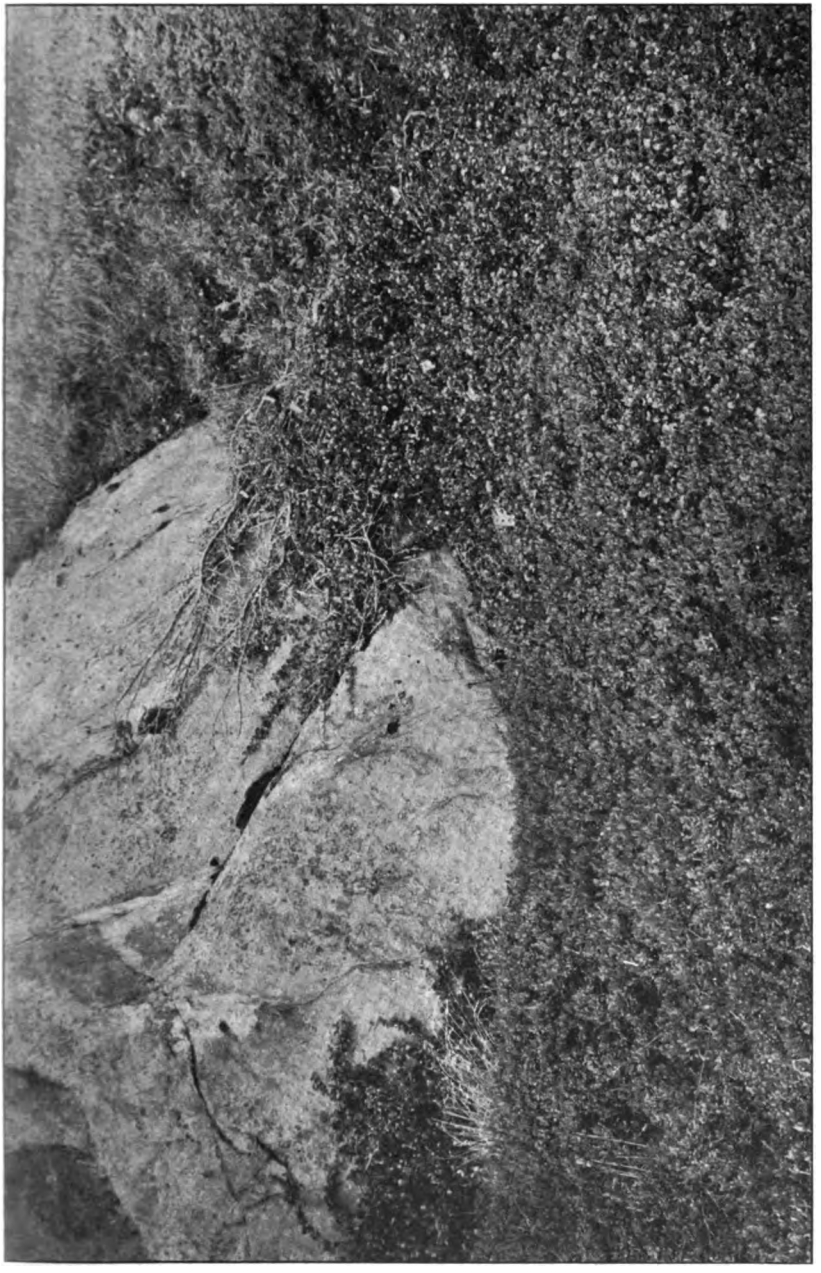

Fig. 28. *Betula nana*-espalier in *Vaccinium*-heath with *Calamagrostis arundinacea*. Forsblads Fjord. (From photo. by Chr. Kruuse).

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rated below; I saw altogether only 1—3 individuals of each species with the exception of *Vaccinium* and *Salix*, of which I noticed about 20.

Dryas octopetala f. minor, Alsine biflora, Cerastium alpinum v. lanatum, Draba hirta, Saxifraga decipiens, S. cernua, S. oppositifolia, Vaccinium uliginosum f. microphyllum, Oxyria digyna, Salix arctica v. groenlandica, Luzula confusa and *Festuca ovina.*

In the pass and up the sides of the mountains up to about 700 metres above the level of the sea were noted:

Dryas octopetala f. hirsuta, Arenaria ciliata v. humifusa, Cerastium alpinum f. lanatum, Papaver radicatum, Saxifraga aizoides, S. oppositifolia, Salix arctica v. groenlandica, Carex nardina and *Poa glauca.*

The walls of the pass were, owing to quick weather-crumbling, totally bare of plants, not even a lichen could be found upon them. The north side of the mountain seen from above was also bare. I went down it 200 metres without finding other than the following mosses: *Timmia austriaca, Plagiobryum Zierrii, Onchophorus polycarpon, Grimmia apocarpa,* and *Jungermania Baueriana.*

The valley below, as seen from the heights, was completely bare of vegetation upon the coarse gravel. Indeed, this place was one of the most desolate and most devoid of vegetation ever seen by me in Greenland. On the other hand the landscape was exceedingly beautiful as from the far projecting Canning Land one had a wide view of large tracts of the coasts with lowlands and picturesque mountain-sceneries.

Angmagsalik.

The observations and collections made during our stay in the days from the 11th—17th Septbr. will be mentioned by Kruuse in connection with his studies conducted in 1898—99 and in 1902.

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List of Plants known from the northern Fjords.

Dryas octopetala.
— — **integrifolia.*
Potentilla maculata.
— *emarginata.*
— *nivea.*
Sibbaldia procumbens.
Chamœnerium latifolium.
Empetrum nigrum.
Silene acaulis.
Melandrium apetalum.
— *involucratum v. affine.*
— *triflorum.*
Sagina Linnæi.
Alsine biflora.
— *verna.*
Halianthus peploides v. diffusa.
Arenaria ciliata v. humifusa.
Stellaria humifusa.
— *longipes.*
Cerastium trigynum.
— *alpinum.*
Lesquerella arctica.
Cochlearia officinalis f. minor.
Draba alpina.
— *nivalis.*
— *Fladnizensis.*
— *hirta.*
— *arctica.*
Braya purpurascens.
— *alpina.*
Arabis alpina.
Cardamine bellidifolia.
— *pratensis.*
Papaver radicatum.
Thalictrum alpinum.
Ranunculus glacialis.
— *pygmæus.*
— *hyperboreus.*
— *nivalis.*
— *altaicus.*
— *arcticus.*
Saxifraga hieracifolia.
— *nivalis.*
— *stellaris v. comosa.*
— *cernua.*
— *rivularis.*
— *decipiens.*
— *aizoides.*
— *oppositifolia.*
Sedum Rhodiola.
Armeria vulgaris v. sibirica.
Veronica alpina.
Pedicularis lapponica.
— *flammea.*
— *hirsuta.*
Euphrasia latifolia.
Pyrola rotundifolia var. grandiflora.
Arctostaphylos alpina.
Cassiope tetragona.
Rhododendron lapponicum.

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Vaccinium uliginosum.
Campanula uniflora.
— *rotundifolia.*
Taraxacum phymatocarpum.
— *croceum.*
Antennaria alpina.
Erigeron uniflorus.
Arnica alpina.
Matricaria inodora v. phæocephala.
Koenigia islandica.
Polygonum viviparum.
Oxyria digyna.
Rumex acetosella.
Salix herbacea.
— *arctica.*
Betula nana.
Tofieldia palustris.
— *coccinea.*
Juncus biglumis.
— *triglumis.*
— *castaneus.*
— *arcticus.*
Luzula arcuata v. confusa.
— *spicata.*
Eriophorum Scheuchzeri.
— *polystachium.*
Elyna Bellardi.
Kobresia bipartita.
Carex nardina.
— *ursina.*
— *scirpoidea.*
— *rupestris.*
— *incurva.*
Carex lagopina.
— *misandra.*
— *salina v. subspathacea.*
— *rigida.*
— *capillaris.*
— *supina.*
— *pulla.*
Alopecurus alpinus.
Hierochloa alpina.
Calamagrostis arundinacea.
— *neglecta.*
Trisetum subspicatum.
Pleuropogon Sabinei.
Phippsia algida.
Arctagrostis latifolia.
Glyceria distans.
— *maritima v. vilfoidea.*
— *angustata.*
Poa abbreviata.
— *glauca.*
— *alpina.*
— *pratensis.*
— *cenisia.*
Festuca ovina.
— *rubra.*
Lycopodium Selago v. appressa.
Cystopteris fragilis.
Woodsia ilvensis.
— *hyperborea.*
— *glabella.*
Botrychium Lunaria.
Equisetum arvense.
— *variegatum.*

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Flower-pollination (N. Hartz).

While referring to my observations from 1891—92 over this question (Medd. om Grønland, XVIII, p. 300) I cite below the isolated observations from 1900:

Sabine Island. 12.—14. VII.

Papaver radicatum — *Ramphomyia* (*nigrita?*).
Silene acaulis ♀ — *Agrotis* sp. (hawk-moth).
Potentilla nivea — flies.
Polemonium humile — flies.
Stellaria humifusa — flies.

Cape Dalton. 20. VII.

Rhodiola rosea ♂ — fly.
Dryas octopetala — numerous flies.
Cassiope tetragona — numerous humble bees.

Hurry Inlet.

Chamænerium latifolium — humble bees, 31. VII and 4. VIII.
Cerastium alpinum — flies, 11. VIII.
Silene acaulis ♀ — *Colias*, 15. VIII.

Polhems Valley. 28. VIII.

Saxifraga aizoides — two humble bees (H. Deichmann).

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Distribution of the species and some varieties in East Greenland (Chr. Kruuse).

	Northern coast part 75°—73°30′	Northern inlet part 73°30′—71°20′	Scoresby Sund 71°30′—70°	Cape Dalton part 70°—69°25′
Dryas octopetala				
— — *f. minor*				
— — *f. hirsuta*				
— — *f. argentea*				
— — **integrifolia*				
— — *f. intermedia*				
Potentilla pulchella f. humilis				
— — *f. elatior*				
— *maculata*				
— *emarginata*				
— *nivea*				
Sibbaldia procumbens				
Alchimilla glomerulans				
Hippuris vulgaris				
— — *v. maritima*				
Callitriche verna v. minima				
Epilobium anagallidifolium				
Chamænerium latifolium				
Empetrum nigrum				
Silene acaulis				
Viscaria alpina				
Melandrium apetalum				
— *involucratum v. affine*				
— *triflorum*				
Sagina Linnaei				
— *nivalis*				
— *cæspitosa*				
Alsine biflora				
— *stricta*				
— *verna v. rubella*				
— — *hirta*				
— — *propinqua*				
Halianthus peploides v. diffusa				
Arenaria ciliata v. humifusa				
Stellaria humifusa				

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	Northern coast part 75°—73°30′	Northern Inlet part 73°30′—71°20′	Scoresby Sund 71°30′—70°	Cape Dalton part 70°—69°25′
Stellaria longipes	.....	.....	.....	.....
Cerastium [1]) *trigynum*	.....	.....	.....	.....
— *alpinum*	.....	.....	.....	.....
Lesquerella arctica	.....	.....	.....	
Cochlearia officinalis v. groenlandica	.....	.....	.....	.....
— — *v. oblongifolia*	...	...	...	...
Draba alpina	.....	.....	.....	.....
— — *v. glacialis*	....		.....	
— — *v. oblongata*	....			
— *glacialis*	.....			
— *crassifolia*	....		.....	.....
— *aurea*			.....	
— *repens*			.....	
— *nivalis*	.....	.....	.....	.....
— *Fladnizensis*	.....	.....	.....	.....
— *hirta*	.....	.....	.....	.....
— *arctica*	.....	.....	.....	.....
Braya purpurascens	.....	.....	.....	
— *alpina* [1])		.....	.....	
Eutrema Edwardsii		...		
Cardamine bellidifolia	.....	.....	.....	.....
— *pratensis*		.....	.....	
Arabis alpina		....	.....	.....
— *Holboellii*			.....	.....
— *arenicola* [1])			...	
Papaver radicatum	.....	.....	.....	.....
Thalictrum alpinum		.....	.....	.....

[1]) According to kind communication from Mr. C. H. Ostenfeld, Ph. D., inspector of the Botanical museum of Copenhagen, the following emendations ought to be made in Kruuse's above-mentioned list of phanerogams etc. (Medd. om Grønland, XXX, S. 143—208):

P. 159. *Cerastium Edmonstonii* (Watson) var. *cæspitosa* (Malmgr.) is: *C. alpinum* L. f. *pulvinata* Simm.

P. 164. The specimens of *Braya alpina* Sternb. & Hoppe cited from Klitdalen in Scoresby Sund (Hurry Inlet, Ryder's Dal, in stony plains and in downs) are: *Arabis arenicola.*

P. 199. *Dupontia Fisheri* from Hurry Inlet, the (Dinosaur-)cleft, is *Poa* (*glauca?*).

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	Northern coast part 75°—73°30′	Northern inlet part 73°30′—71°20′	Scoresby Sund 71°30′—70°	Cape Dalton part 70°—69°25′
Batrachium paucistamineum v. eradicata			...	
Ranunculus glacialis	...	...	...	...
— *pygmæus*	...	...	...	...
— *hyperboreus*	...	...	...	...
— *nivalis*	...	...	...	...
— *altaicus*	...	...	...	
— *arcticus*	...	...	...	...
Saxifraga hieraciifolia	...	...	...	
— *nivalis*	...	...	...	...
— *stellaris v. comosa*	...	...	...	...
— *cernua*	...	...	...	...
— *rivularis*	...	...	...	...
— *decipiens*	...	...	...	...
— *tricuspidata*			...	...
— *hirculus*	...			
— *aizoides*		...	...	
— *flagellaris v. setigera*	...			
— *Aizoon v. brevifolia*			...	
— *oppositifolia*	...	...	...	...
— — *v. Nathorsti*	...	...	...	
Sedum Rhodiola	...	...	...	...
Armeria vulgaris v. sibirica	...	...	...	
Pinguicula vulgaris			..	
Veronica alpina		...	...	...
— *saxatilis*			...	...
Pedicularis lapponica		...	...	...
— *flammea*	...	...	...	...
— *hirsuta*	...	...	...	...
Euphrasia latifolia		...	...	...
Polemonium humile	...			
Gentiana tenella	...		...	
Diapensia lapponica			...	...
Pyrola rotundifolia v. grandiflora		...	...	
Arctostaphylos alpina		...	...	...
Phyllodoce coerulea			...	...
Cassiope tetragona	...	...	...	...
— *hypnoides*			...	...
Rhododendron lapponicum	...	...	...	...
Vaccinium uliginosum	...	...	...	...

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	Northern coast part 76°–78°30′	Northern Inlet part 78°30′–71°20′	Scoresby Sund 71°30′–70°	Cape Dalton part 70°–69°25′
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[illegible]				
[illegible]				

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Meddelelser om Grønland,

udgivne af

Commissionen for Ledelsen af de geologiske og geographiske Undersøgelser i Grønland.

En og tredivte Hefte.

Med 4 Tavler.

Kjøbenhavn.
I Commission hos C. A. Reitzel.
Bianco Lunos Bogtrykkeri.
1904.

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A PHONETICAL STUDY

OF

THE ESKIMO LANGUAGE

BASED ON OBSERVATIONS MADE ON A JOURNEY IN NORTH GREENLAND 1900–1901

WITH A HISTORICAL INTRODUCTION ABOUT THE EAST ESKIMO, A COMPARISON OF THE ESKIMO DIALECTS, A NEW COLLECTION OF GREENLANDIC FOLK-TALES, SONGS AND MUSIC, AND A MAP OF THE ESKIMO TERRITORIES

BY

WILLIAM THALBITZER

MEDDELELSER OM GRØNLAND VOL. XXXI

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1904

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PREFACE.

In the spring of 1900, I proposed to the "Commission for the Direction of Geological and Geographical Explorations in Greenland" that I should like to make a scientific study of the Eskimo language there, and I offered to prepare myself for this work by a year's stay in Danish North Greenland.

The Commission consented to arrange for such an undertaking and to enable me to make the stay in Greenland that I desired, so that I could there collect material for a work about the language calculated to appear among the publications of the Commission. On account of the unusual nature of the investigations I was to pursue, I was given no special instructions. The hope was merely expressed that my travels might also possibly result in some contributions to the ethnography and traditional history of the Greenlanders (cf. the Commission's communication to me of March 17, 1900).

I was accordingly left at liberty to choose for myself which sides of the subject I should lend special attention to and what methods I should use. It is but natural that a work which is begun under these circumstances will easily become marked by the author's special training and individual interests in his department. Yet I hope that chance has not in too great a degree set its stamp upon this work.

I entered upon the undertaking not only with enthusiasm but also with the best intentions of making unbiased observation, absorbed with the desire of learning the language as well

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as possible and of presenting my observations in as exact a form as possible. In how far I have succeeded in the latter will have to be tested by future experience. It was not until I came to work up my material that I fully realized how difficult it is to observe well when the object of observation is such a rapidly passing phenomenon as language, and when the instrument is as individual and subjective as the human ear.

An account of my travels and of my methods of phonetical investigation will be found in the Introduction.

The first object I set for myself was an investigation of the phonetics of the North-Greenlandic language.

After I had on my return home worked up my treatise on this subject, which I consider the chief result of my travels, I realized that I had obtained a new basis for a critical employment of the existing lists of words and specimens of language from the other Eskimo dialects in Greenland and in Canada. I therefore worked out the treatment of the Eskimo dialects which is found appended to the treatise on the phonetics of the language.

There is, however, much more yet to be done in the line of comparison of dialects. I feel confident that such a comparative study is a way of attaining a better founded understanding of this language, especially of its word-formations and its whole synthetical character. Not until the Eskimo dialects have been studied in this way will it be possible to describe and formulate the Eskimo grammar after its own principles, I mean in such a way that the inflexional suffixes with any degree of certainty can be classified on a basis of their inner, etymological connection. My original plan of appending to the phonetical treatise a presentation of the grammar and psychology of the Eskimo language I therefore postponed until later, after having realized how important it was that this work of comparison should be taken up first.

To the specially linguistic bibliography which is found in

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the last part of the introduction I have added a short sketch of the Greenlanders' literature and of the present state of their intellectual culture.

Finally, on the basis of those accounts of arctic exploration that I had the time to look into, I have prepared the accompanying map showing the present and the earlier extension of the Eskimo race. It has been executed at the Royal Hydrographic Office, to whose director, Commodore G. Holm, I am much indebted for the care and interest with which he has taken charge of the work.

The collection of folk-tales and songs which I obtained in Greenland is considerable. (Yet the collections made by H. Rink in the middle of the last century far surpassed mine not only in bulk but also in value, my collection of folk-tales being rather an after-crop.) With respect to the songs that I took down, they consist partly of drum-songs, nursery rhymes etc. of older origin, perhaps from heathen times, which are easily recognized by their Eskimo melodies, partly of popular songs of modern origin set to sailor-melodies, often to the latest popular melodies from Copenhagen. Here I have only published the former of these two groups, and as far as the melodies are concerned, only a selection. — There is no doubt that all these tales and songs give us some good samples of the Eskimo's everyday language and of his way of thinking. On the whole, with the exception of some few loan-words, there is no European influence to be noticed in the spoken language of the Greenlanders, but this is only natural, since not many of them know anything about any other language but their own. Furthermore both the tales and the songs that I have written down have even been transmitted from older generations in tolerably unchanged form and, with a few exceptions, uninfluenced by European ideas. If the language in which I have given them should contain faults and inaccuracies here and there, they are incorrect reproductions of single words which may have been indistinctly pronounced,

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or repeated for me in a different form from the one which would have been used in the course of ordinary conversation. But at any rate I have aimed at as faithful empirical observation and reproduction as possible.

Most of these notes and records I took down on my sledge-journeys, in the huts of the natives, sitting on the edge of the stump-bed, with no other desk but my knee to rest the paper on. The dim daylight from the window and the flame of the train-oil lamp in the hut made it just possible for the pen to find its way over the paper. At that time I could give no attention to the contents and connection of what I was hearing since I had to concentrate it all on the phonetical side of the words so that I could get an accurate reproduction of them: most of the words I repeated to myself as I wrote them down. I refrained as much as possible from stopping the narrator or the singer in order to have him repeat a word, but I often let him repeat the whole so that I could revise my record. When I noted down melodies to the songs, I used my violin, which was tuned after the tuning-fork that I always carried with me. — Thus I collected in the course of a year a considerable pile of paper filled with specimens of the Greenlandic language both in prose and poetry. In style and spirit at least, they are real Eskimo, even if there should be some few corruptions due to the narrator, or some mistakes which I have made on account of the haste in which I had to write them down.

With respect to the books which have been published in the Greenlandic language so far, I consider them in part, but only in part, fit to learn the language from. Anyone who wants to have the pure Eskimo language by itself will either be very careful in using, or altogether shun, the translations, especially when they have not been made by natives but by foreign missionaries. For the latter have generally been so impressed with the power of the language to form new expressions that they have themselves in abundant measure employed this power in

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order to get expressions for new ideas. Even if the translations are correct, yet they do not represent Eskimo ways of thinking in Eskimo style of expression. I can rather recommend those articles about life in Greenland which have been contributed by natives, generally school-teachers, to the national magazine *Atuagagdliutit* (cf. Introduction p. 65). The system of orthography in this magazine is the same as the one used in the Greenlandic-Danish dictionary (published 1871).

The author of this dictionary and originator of the present orthography was the missionary S. Kleinschmidt. The advantage of his orthographical system consisted principally in the introduction of accents to indicate not only the word-stress but also in part the quantity of the sounds, moreover in the distinction drawn between *k* and *ĸ* (my *q*). And furthermore, in the case of many words Kleinschmidt has given a more precise form than that found in earlier authors. It is, however, necessary to have heard the language in order to understand his representation of it, which does not convey a direct impression of its phonetical character. Of course there is no doubt that Kleinschmidt knew the Greenlandic language as well as his mother tongue. Of that his grammar and his dictionary bear sufficient evidence. It would be ungrateful of me not to emphasize the great debt which I owe to his thorough treatment of the South-Greenlandic language as long as 50 years ago. I am convinced that the two above-mentioned works of his will in just as high a degree as the founder Poul Egede's works continue in the future to retain their value as linguistic monuments, that is as sources of lexical and grammatical knowledge about this language as it was at the time of each respective author. There will still be enough left to do for modern or future philologists, who will find other problems to solve and will require other means of solving them than those which were at Kleinschmidt's disposal.

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Now in completing my work I cannot but feel that this strange language still invites to long continued investigation and that I have far from sounded its lowest depths. Yet I hope that the results which I publish here may be of some aid to one or another student who needs information of this kind about this very inaccessible language — until some time when there shall be still fuller and more certain information to be had.

Before concluding I should like to express my sincere gratitude to the Commission for the Direction of Geological and Geographical Explorations in Greenland for the excellent assistance which they have lent me in the accomplishment of my task and for the confidence which they have shown me throughout; likewise to the Carlsberg Fund, which has shown its interest in my undertaking by enabling me after my return from Greenland to devote all my time and energy to this work so as to complete it as soon as possible.

Furthermore it must be permitted me here to express my heartfelt thanks to my former instructors at the University of Copenhagen, Professor Vilhelm Thomsen Ph. D., Professor Harald Höffding Ph. D. and Professor Otto Jespersen Ph. D., who by their recommendations and the interest they have shown my plan have encouraged me to carry it through.

Finally I should like to give my best thanks to those who because of their special acquaintance with the language, history or conditions of Greenland have been able to furnish me with much useful information, to Dr. K. J. V. Steenstrup and Commodore G. Holm; to Professor Finnur Jónsson Ph. D. of the University of Copenhagen; to the anthropologist, Police Surgeon in Copenhagen, Sören Hansen; to the inspector of the Zoological Museum, H. Winge; to Mrs. Signe Rink; to mag. scient. C. Kruuse; to Lieutenant in the Navy G. C. Amdrup and to Mr. E. Mikkelsen-Löth (to the latter especially for many particulars for the map showing remains of earlier Eskimo settlements); to Pastor Christian Rasmussen, the parish rector in Lynge and lector in the Greenlandic language, formerly missionary in North Greenland; to Pastor Schultz-Lorentzen, Principal of

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Godthaab Seminary in South Greenland; to the colonial manager Johan Petersen and to Pastor P. Rüttel in Angmagsalik on the east coast of Greenland; to the Eskimo Pastor Tobias Mörch in Upernivik and to Pastor Andreas Hansen in South Greenland; likewise to the many other Danish officials and native Greenlanders who hospitably opened their homes to me and guided me in their arctic land and in the language of this land.

I also want to express my gratitude to Den kongelige Grönlandske Handel (The Royal Greenland Trading Department), on whose ships I sailed to and from the distant land. The present director-in-chief, Mr. Ryberg, is known as the author of a Danish-Greenlandic parleur especially intended for the officials sent to Greenland by the Royal Greenland Trading Department.

The work has been translated into English by Mrs. Sophia Bertelsen, M. A.

Copenhagen in August 1904.

W. Th.

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INTRODUCTION.

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I.

Journey. Method of Investigation. Method of spelling.

1. **My journey.** I sailed from Copenhagen May 20, 1900 on the brig Tjalfe belonging to the Royal Greenland Trading Department, and arrived, after a six weeks' voyage, at the colony of Jakobshavn in North Greenland (Disko Bay).

During my daily intercourse with the Greenlanders in this colony, I began to learn to speak Greenlandic, thus supplementing by the study of the living language that insight into it which I had hitherto only been able to get through books*). I frequently moved out to the Greenlanders to the north and to the south, and lived with them a few weeks at the time. At about Christmas time, while staying in the house of the colonial manager, Poul Müller**), I prepared the lists, on the basis of which I later collected specimens of the phonetical elements of the language in those parts of Greenland which I visited.

About the middle of January 1901, as soon as the darkest period of the long winter-night was past, and the ice lay along

*) Yet I had already several times had the opportunity of hearing Greenlandic before my departure from Copenhagen, having here met the South Greenlander Henrik Lund, who was on his way, via Copenhagen, to the east coast, where he was to take up his work as "kateket".

**) Among my various hosts in Greenland, I feel especially grateful toward this Færoic man, who received me with the greatest hospitality on my arrival in the land and whose guest I was for about half a year. The year after my return from Greenland I received the sad news of his death.

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the coasts, I left Jakobshavn to begin a sledge-journey to different parts of inhabited North Greenland. My object on this journey was to gather new impressions of the language and folklore of the people and abundant material for a study of both. I first traveled along the coast of Disko Bay to Egedesminde, and from there 68 miles farther south to the Eskimo settlements around the *Aulätsiwik* Fjord, where the Greenlanders are supposed to have been very little influenced by civilization. Here they still use gut for their window-panes (not glass), and drift timber for the beams and wood-work of their houses; they have no wooden flooring, the earth remaining bare, and all cooking, heating and lighting is accomplished by means of their potstone lamps. After a few weeks' stay with these primitive but friendly people, I continued my journey toward the north and returned to Jakobshavn in the end of February.

It was not long before I again departed from here and traveled farther north on my sledge across the Nûgsuak Peninsula to the colony of Umanak (*Oommannaq*), which lies on a little island in the middle of a big fjord. With this as my starting-point I traveled over the whole district in the course of the spring, being able to traverse the fjord-ice on my sledge, and thus get around to all the Eskimo settlements about the coasts of the fjord.

When the ice broke up in the month of June 1901, and the ships from Denmark arrived, I traveled north on board the bark Thorvaldsen as far as the trading-place Prøven, and thence by long-boat to the northernmost Danish colony Upernivik (*Upernawik*). On the way home, we touched at Godhavn. After an eight weeks' stormy voyage, I arrived in Copenhagen October 7, 1901.

Of the 400 days which I spent in Greenland, I lived for 142 days with natives in the Eskimo settlements, and the rest of the time in the Danish colonies. But I allowed no day to pass without being in company with natives several hours.

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In terms of latitude, my travels in Greenland extended from 68° 13′ to 72° 47′ N. lat. Between January 15 and March 17, I traveled 920 miles by sledge, accompanied by various native guides.

A survey of the chief points on my journey through North Greenland is given on p. 6.

2. **My Method of Investigation.** The phonetical lists mentioned above, which I had with me on my travels, and on which I noted down the results of my direct investigations, deserve closer attention, since they have been of the greatest importance to me in the determination and classification of the phonetical elements of the spoken language. They are so arranged that for each of the sound-elements in the language, there is a special list headed with the symbol of the sound under consideration. Each list consists of a series of such words of the language as I anticipated would be useful for the observation of that particular sound. This is the way in which I used them. In every place where I came for the purpose of closer investigation of the language spoken there, I hired a Greenlander to pronounce and repeat again and again for me those words of the lists which I asked him to say. I thus got an opportunity of observing the parts of his mouth while he pronounced the various sounds of which the word was composed. If the sound which I especially desired to investigate happened to be produced by means of a position of the organs of the mouth which could not be directly observed when it was naturally taken, I had to let him hold his mouth wide enough open for the light to penetrate into it and the movement of the tongue to be visible. In order not to change the nature of the sound by a too forced position of the jaws I tried to make my observations with the least possible opening of the mouth. Only in some few cases, for instance in the articulation of *q*, it seemed to make no difference whether the angle of the jaws was big or little. In such cases, in order to illustrate for the Green-

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(Those place-names which are spelled according to the ortography adopted in »Meddelelser om Grönland» are printed with the usual (upright) letters; those printed with italics are phonetically spelled.

The abbreviations of names used in this work are given here.

The dates give the days af my arrival and departure.)

		1900—1901	N. lat.
Jkh.	Colony of Jakobshavn (*Ilulissät*)	June 30—Aug. 17	69° 13′
Rdb.	Trading-place Rodebay (*Oqa·ttut*)	Aug. 17—Aug. 30	69° 20′
	Colony of Jakobshavn		
Ki.	Eskimo settlement Kingigtok (*Kiŋittoq*)	Sept. 7—Sept. 20	69° 14′
	Colony of Jakobshavn		
	Trading-place Rodebay	Nov. 17—Nov. 24	
	Colony of Jakobshavn		
Ka.	Trading-place Kangâitsiak (*Kaŋa·ttsiaq*)	sledge-journey Jan. 15—Jan. 19	68° 18′
Arq.	Eskimo settlement *Arqittoq*	Jan. 22—Jan. 30	68° 13′
Nqs.	Eskimo settlement *Niaqornarsuk*	Jan. 30—Feb. 7	68° 15′
Egd.	Colony of Egedesminde (*A·usia·t*)	Feb. 10—Feb. 20	68° 42′
Eq.	Egedesminde / Eskimo settlement *Eqe*	sledge-journey via Christianshaab (Chr.) and Claushavn (Cl.) Feb. 28—March 5	
Omnq.	Colony of Jakobshavn / Colony of Umanak (*Oommannaq*)	sledge-journey March 5—March 17	
Nqt.	Trading-place Niakornat (*Niaqornät*)		70° 47′
Nus.	Trading-place Nûgsuak (*Nu·ssuaq*)	March 20—March 26	70° 40′
Uk.	Trading-place Uvkusigssat (*Ukkusisät*)	March 26—April 3	71° 2′
Il.	Trading-place Igdlorssuit (*Illorsuit*)	April 3—April 13	71° 15′
Up. N.	via Upernivik Nûa (*Nu·a*)		71° 10′
	to Colony of Umanak (*Oommannaq*)	April 14—July 24	70° 40′

Eskimo settlements in Umanak Fjord: *Sa·ttut* (*Sa.*), *Tu·litalik* (*Tul.*), *Itiwliarsuk* (*Iti.*), *Sälliarusät* (*Säl.*), *Oommannättsiaq* (*Omnt.*), *Ikerasak* (*Ike.*), *Qarajaq* (*Qarj.*). *Sermiarsuit* (*Serm.*), *Qa·rsut* (*Qars.*), *Qeqertät* (*Qqt.*), *Appa* (*Ap.*), *Auppilättoq* (*Aup.*) etc.

Prö.	Trading-place Prôven (*Kaŋersuättsiaq*)	Aug. 1	72° 23′
Up.	Colony of Upernivik (*Upernawik*)	Aug. 2—Aug. 11	72° 47′
Gdh.	Trading-place Godhavn	Aug. 18—Aug. 24	69° 14′

Furthermore I have visited in passing the following trading-places and Eskimo settlements: Akugdlit (*Ak. Akullit*), Ikamiut (*Ika.*), both between Christianshaab and Egedesminde, Manermiut (*Man.*), *Qeqertarsua·tsiaq* (*Qqts.*), *Qipiŋasoq* (*Qip.*), south of Egedesminde, Pâkitsok (*Pa. Pa·kittoq*), Atâ (*At.*), Kekertak (*Qqq. Qeqertaq*), north of Jakobshavn in Disko Bay.

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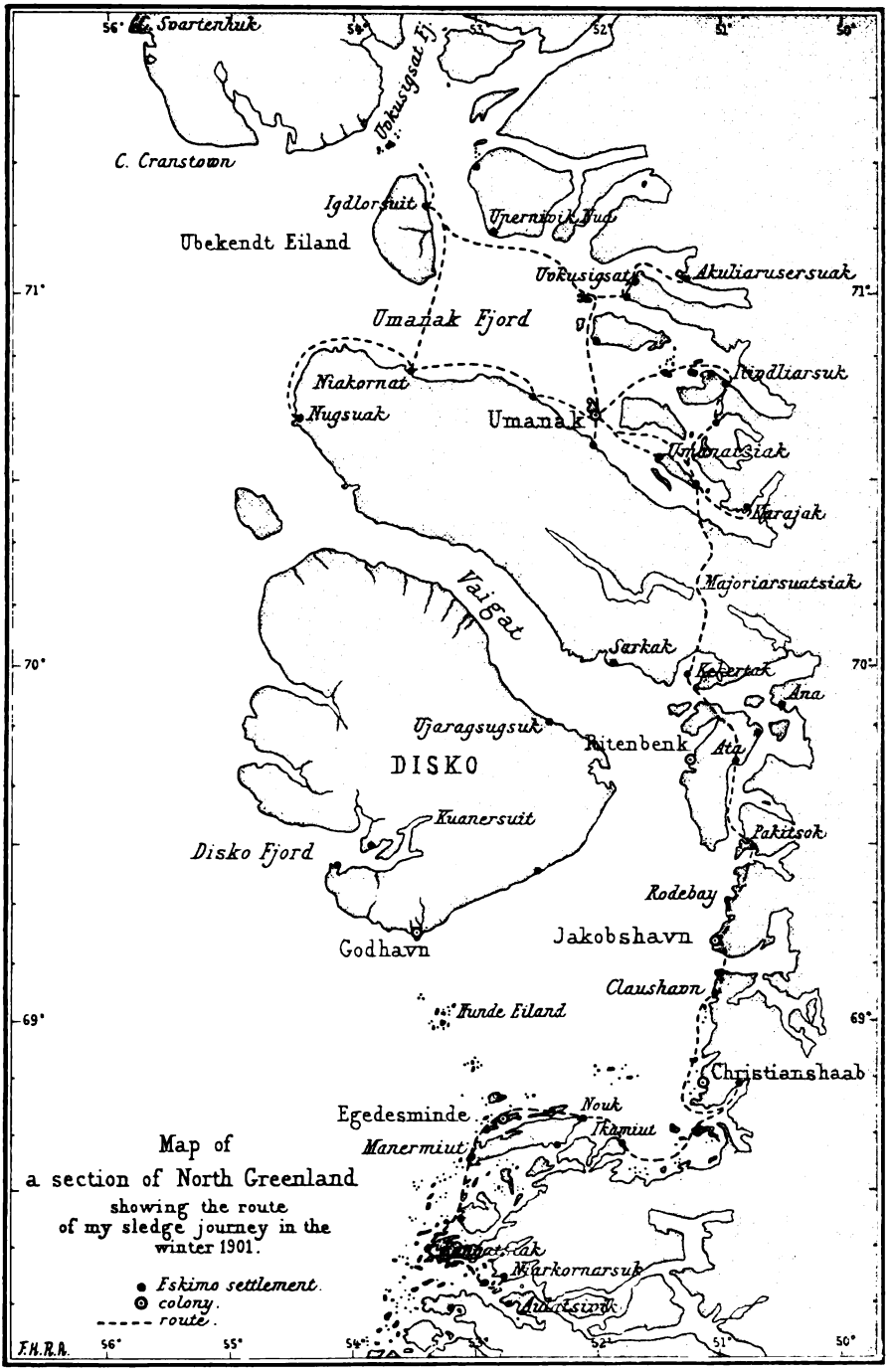

Map of
a section of North Greenland
showing the route
of my sledge journey in the
winter 1901.

● Eskimo settlement.
⊙ colony.
----- route.

lander what I wanted him to do, I used, especially in the beginning, a "stretcher" in the shape of a little bone peg, which was placed between the upper and lower front teeth in order to support the jaws, and to keep them at the same distance from each other while the word was pronounced.

Through these observations of the sounds of the language, I have in each single case been enabled to determine the manner of articulation, especially as far as the consonants are concerned, and immediately to indicate it analphabetically on the corresponding list along side of the key-word employed. — In addition to the lists which I used for determining the vowels and consonants of the language, I had other lists where I wrote down my observations with respect to quantity and stress in Greenlandic, together with some few rhythmical and musical peculiarities.

My experiments in connection with the lists were made with 20 Greenlanders from the various places which I visited. I here mention them all in the order from north to south:

Upernawik District: I. Margrete Petersen, née Lynge, born in *Upernawik* 1833, daughter of a Greenlander from *Kiŋittoq*, north of *Upernawik*, married to the following II. Andreas Petersen, born in *Upernawik* 1833. III. Robert Thomassen, *Upernawik*, born 1855. IV. Lars Christiansen, Pröven, born about 1883.

Oommannaq District: V. Peter Uthesen (*Pitakâwssaq*), Igdlorsuit (or *Quŋulertusoq*), born 1869. VI. Pele Sakkæusen (*Pe·lekâwssaq*), Igdlorsuit, born 1870. VII. Emanuel Samuelsen, Cape Upernivik by Igdlorsuit, born 1870. VIII. Peter Isaksen, *Ukkusissät*, born 1857 (in *Qeqertât*). IX. Karl Broberg, *Qarajaq*, born 1861. X. Pavia Samuelsen (*Paviakâwssaq*), Sagdliarusat, born 1868. XI. Lars Frederiksen, *Oommannaq*, born 1878. XII. Juanna Leibhardt, *Oommannaq*, born 1862. XIII. Jakob Sigurdsson (Te·), *Sermiarsuit*, born 1828.

Jakobshavn District: XIV. Pele Bröndlund, Rodebay, born 1876. XV. Karl Olrik, Rodebay, born 1850. XVI. Pavia Cortzen, Jakobshavn, born about 1876. XVII. Johannes Jensen, Jakobshavn, born about 1850.

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Egedesminde District: XVIII. Porta Svendsen, Egedesminde, born 1878. XIX. Jakob Inugsuttoq, *Arqittoq*, born about 1876. XX. Ole Ugpernangittoq, *Niaqornarsuk*, born about 1885 in *Kaŋa'ttiaq*.

That which I shall give from my phonetical lists in the following pages can thus be considered as the empirical results of my investigations with respect to the sound-elements of the language. The *v*-list will be given in its entirety as an illustration of how my lists were arranged and used (§ 11). As for the other lists, I generally give only the average result of my observations for each word; in exceptional cases, the Roman numerals are used to indicate the individuals in whose mouths I observed the articulation.

For every key-word cited from the lists, I give 1) a phonetical transcription, 2) its chief meaning, 3) analphabetical indications of the articulation of the sound under consideration according to O. Jespersen's system*). — For my investigations of the accent of the language, the reader is referred to the special section on this subject (§ 21—23).

3. My own and other methods of spelling in Greenlandic. The forms of the words as they occur in ordinary conversation, I have been able to get hold of especially in those fragments of the language which I took down in my small note-books, and in the folk-tales and songs which I wrote down as the natives told them. In all that I took down, I exerted myself to reproduce what I had heard with as great phonetical accuracy as possible, without consideration for any earlier system of orthography. In order to make sure of what I had heard, I always sought to have it repeated whenever possible. My purpose has always been first and foremost to give a picture of what I myself have observed and comprehended; my second-hand

*) O. Jespersen: The Articulations of Speech Sounds. Marburg 1889. — Fonetik. København 1897—1899. Lehrbuch der Phonetik. 1903.

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observations are but few, and I have tried to use only such sources as there is reason to believe are reliable.

It is by no means surprising to meet with a complete confusion of various orthographical systems in those descriptions of the Eskimo language which have hitherto been published. For the authors have belonged to different nations, and each one has of course started out from his own language, and made his own native pronunciation and orthography the basis of his auricular impression and his manner of spelling this strange literatureless language. It is natural that each one as far as possible operates with the alphabetical characters of his own language, and only few of them seem to realize how purely accidental it is if these happen to correspond to the sounds of the new language, and how improbable it is that the sound-systems of the two languages will in any way cover each other. Danish and German authors have described the dialects in Greenland and in Labrador; French, English and Russian authors have described the western dialects. They are men who themselves have traveled through Eskimo territory, often men who have made long stays among the natives, but they have always lacked scientific linguistic training and too often also natural linguistic talent. The specimens of the language given in their works are therefore spelled according to the most varied principles. For a philologist it is not uninteresting to compare the many different reproductions of the same word in these different works, (among other reasons because they give an insight into the national differences in the impressions conveyed by the common alphabetical symbols); general comparisons between the stocks of words and between the meanings of words in the different dialects may no doubt be easily undertaken; but a scientific comparison with a view to clearing up such phonetical differentiations as may indicate something of the relations between the Eskimo dialects and of the history of the language can only be undertaken with great difficulty and

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uncertainty on the basis of these scattered, unmethodically reproduced specimens of the language.

Nevertheless the explorers of the inhabited regions in the north deserve our gratitude for having taken down specimens of the native language in the parts which they visited, for many of these specimens are really of great interest for the comparison of the dialects. We must only remember, when we want to use them for this purpose that many accidental influences may have been brought to bear on the forms in which the words have been communicated to us. In most cases it is almost a matter of chance for the explorer's untrained ear if he takes note of the phonetical differences between the dialects. Now he takes down the language from the mouth of the native, now from the mouth of the interpreter. The dialectal characteristics are especially apt to be effaced through the intervention of interpreters, who as a rule report what they hear of the strange dialect with the accent peculiar to their own idiom. Everything in the strange dialect is thus leveled down to the known dialect.

Therefore if we take the trouble to study the traveler's specimens of the language which he has heard, we must always take into account not only his nationality, but also his own and his interpreters' inaccuracies, misunderstandings and inconsistencies. If he was previously acquainted with any of the known dialects from books, for instance South Greenlandic, the new dialect which he hears will undoubtedly be colored for him by the dialect which he knew before, and he will of course use the orthography of the dialect he knows for reproducing the new one. It will be most convenient for him to overlook the small differences of dialect.

But even if he should wish to note down these differences as the missionary does, yet it is not everyone that simply because he wants to will be able to practise that fine art of

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accurately distinguishing the sounds of a language and of appreciating the finest shades of articulation. It is not enough to draw up a table of the sound-symbols or letters of the alphabet used; the meaning of these symbols, that is to say, the articulation of each sound must be accurately described. But in order to give such a description, it is necessary, first, to observe correctly, and secondly, to describe competently.

Well, it is the business of the scientific worker to be careful, and I have only ventured these remarks in order to justify the use which I in spite of everything have made of the specimens of the language given by travelers and the descriptions of the language written by missionaries. The paragraphs in which I especially treat the Eskimo dialects will show in how far I have dared to make use of these sources and what conclusions I could draw from them. I have felt in regard to them in about the same way — mutatis mutandis — as the historical philologist feels in regard to the alphabetical symbols in the old inscription which he is interpreting. On account of typographical difficulties, I have not always been able to retain throughout the orthography used by the foreign author; in such cases, I have substituted for his symbols those of my own which I considered most adequate.

If I have thus been compelled to use the severest kind of criticism with respect to the works of others on this subject, I realize that the value of my own work will depend upon whether I have been equally critical with respect to it. I too in examining this language, which only a few years ago was unknown to me, have had to proceed from something known to something new and have had to see the latter in the light of the former. What mistakes and inaccuracies I may have been guilty of, future investigations of the subject will have to decide. To facts I willingly submit; but I think I have been ahead of previous investigators of this language in my theoretical knowledge of the formation of speech-sounds in general and in my

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scientific training in that group of the European languages to which my mother tongue belongs.

In this work, I have tried to counteract all uncertainty and inaccuracy by aiming to give an exact description of the sounds of the language as I heard them, together with a consistent system of phonetical transcription. My sound-symbols were not unchangeably established all at once as if by manifest, but they were time and again altered and adjusted under the influence of my direct phonetical experiments in Greenland. They have been chosen with especial consideration for those sound-symbols which are gradually winning an established place in phonetical science. I felt convinced that only by proceeding in accordance with that scientific tradition which has raised the science of phonetics to the place which it occupies today could I expect to make this work be of any importance for students of general comparative philology. Of course it was sometimes necessary for me to find a (new) particular symbol for a new sound of constant occurrence which I wished to isolate from the other better known sounds; at other times again I had begun by using an unusual symbol and ended by changing it to a more usual one, when I came to realize that the sound was after all nearly related to a known sound in a known language. Modern phonetical science, as is well known, chooses its sound-symbols as far as possible in agreement with the current or average usage of the symbols in the chief European languages (with the exception of Bell's Visible Speech). I have of course followed this principle in reproducing the Eskimo speech-sounds; I have also, like the phoneticians, taken the liberty of adopting some few symbols from other languages without regard for their peculiar use in the languages from which they are taken. I therefore want to caution here against any misunderstanding of the Greek letters which I have employed. The fact that I have used them does not imply that there is any special resemblance between the Eskimo and the Greek languages; λ and υ (just

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like the common phonetical symbol ŋ etc. are merely outer symbols, merely disguises, and the reader must turn to the description of the sounds in order to learn what peculiarities in the Eskimo language are expressed by them.

I hope that the system of symbols which I have used, far from hindering, rather will further the absorption of this group of languages into the large reservations of ready material for scientific research.

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II.

Historical data about the East Eskimo.

Our knowledge about the early history of the Eskimo people and their language is not great, although they inhabit that part of the new world about which we have the earliest historical accounts; I have especially in mind the old Icelandic sagas and other works of Scandinavian historians. The historians of our own time and of the past century have with ever sharper and clearer judgment tried to determine the relations between the various old sagas, their sources, and their dating, until they have gradually succeeded in distinguishing between the authentic and the more incredible elements, and have thereby made it possible for us to use them in establishing historical data. The Eskimo themselves have next to nothing in the way of historical traditions and no chronology whatever. When they say that this or that event happened in olden days (*itsaq*), they may just as well be referring to the times of their grandparents and their great grandparents as to the times of their ancestors who lived 1000 years ago. We can rather obtain certain information about the earlier homes and wanderings of this people through the accounts of the first discoverers than through the Eskimo people's own traditions. I shall here limit myself to giving a survey of the information which has been obtained in earlier and later times about the Eskimo inhabitants of the coast of Davis Strait, and of those traces of the earliest communication with them which were preserved in traditions

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on both sides of the Atlantic, even after the connection between the two worlds for a time had been broken off.

In about the year 1133, the Icelandic priest named Ari Þorgilsson enn fróði wrote the first little book about Iceland, which is still in existence and which contains among other things the earliest account of the discovery and settlement of Greenland*). We know that Ari's authority for this account of Greenland was his uncle Þorkell Gellisson, whose information in turn goes back to one of the participants in the first expedition to Greenland. This expedition took place in 985. With respect to this matter, we read in Islendingabók, chapter 6:

"The land which is called Greenland was discovered and settled from Iceland. Eirík the Red was the name of a man from Breiðifjord, who traveled thither and took possession of land in that locality which is since then called Eiríksfjord. He gave the land a name and called it Greenland, and said that it would give people a desire to go there if the land had a good name. They found there, both in the eastern and western parts of the land, traces of human habitations and fragments of (skin-?) boats and stone implements, which indicates that the same kind of people has wandered there as settled Vineland, a people whom the Greenlanders call Scrælings. He began to settle the land 14 or 15 winters before Christianity was introduced here in Iceland, according to what was related to Þorkell Gellisson in Greenland by a man who had followed Eirik the Red thither."

That the *Scrælings* in Greenland are identical with the ancestors of the present Greenlandic Eskimo inhabitants may

*) F. Jónsson: "Den oldnorske og oldislandske literaturs historie", Copenhagen 1898, vol. II, p. 354 ff. — Ari's Islendingabók, ed. F. Jónsson, Copenhagen 1887.

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be considered as certain. If Ari's information is reliable — and there is no reason to question it — there were already before the year 1000 A. D. Eskimo wanderers in the southern part of Greenland, but they did not settle down there. They must have preferred regions farther north, if they have not limited themselves to a visit in Greenland. There is at all events reason to suppose that the Eskimo people in Greenland at that time consisted merely of some small hordes, which only shortly before had come to the land, and who led a roaming life along the northernmost coasts.

During the next few centuries after the year 1000, the Icelanders settled the southern part of the west coast, where numerous ruins around the fjords at the colonies Julianehaab (Østerbygd) and Godthaab (Vesterbygd) still bear evidence of the old Norse colonization*). From here proceeded the discovery of America. The first place where the Norsemen saw the Skrælings themselves was not on the coasts of Greenland, but on the coasts of the New World.

Already in the year 999, Leif, the son of Erik the Red, had reached America, about 500 years before Columbus. The discovery was quite accidental, since Leif was on his way from Norway to Greenland, when a storm drove him over to unknown lands in the west, where he found „self-sown wheat-fields and grape-vines growing". The returning discoverers' accounts of these new regions, whose fame soon spread throughout the North, occasioned the big expedition which in 1003 started out from Vesterbygden in Greenland under the leadership of Thorfinn Karlsefni for the purpose of colonizing "Vineland", as the Norsemen called the southernmost part of the newly discovered land**).

*) F. Jónsson: "Grönlands gamle topografi efter kilderne. Østerbygden og Vesterbygden". Meddelelser, Vol. 20 (1899). — K. J. V. Steenstrup: "Om Østerbygden". Meddelelser, Vol. 9 (1889).

**) Our chief source of information with respect to the Vineland expedition is Eireks saga rauða, Erik the Red's saga, which we have in two

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There were three ships in all with 140 men. Their stay in America lasted three years. For various reasons, they did not succeed in founding a colony over there, perhaps especially because the aggressive attitude of the natives made the conditions too uncertain for them. After the plans for colonization had been given up, they returned to Greenland, bringing with them from Markland two Skræling children whom they had taken captive. "They taught them [the Icelandic] language and baptized them", says the saga.

The accounts of Vineland, Markland, and Helluland which are preserved in the sagas are in the main to be traced back to the participants in Thorfinn's expedition who returned home. If there have been later expeditions to these lands from Greenland or Iceland, we have at all events no certain historical accounts of them. The designation Skrælings was probably first used as a general name applied to the native population found on the coasts of Markland and Vineland. With respect to the situation of these lands, the lately deceased Norwegian historian, G. Storm, has come to the result that Vineland corresponds to the present Nova Scotia together with Cape Breton Island, Markland (i. e. the woodland) to Newfoundland, Helluland to Labrador or possibly the northernmost part of Newfoundland*).

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old Icelandic manuscripts in the University Library in Copenhagen: 1) Hauksbok (AM 544) written by Haukr Erlendsson about 1320, ed. by Det kgl. nordiske Oldskriftselskab, Copenhagen 1892—1896, 2) MS. AM 557, 4to dating from the 15th C., whose original must have been written before 1300. — The accounts contained in Flateyarbok and in the so-called Grœnlendinga þáttr are not to be depended upon. — Eiríks Saga Rauða, ed. by G. Storm, Copenhagen, 1891.

*) Gustav Storm: "Studier over Vinlandsrejserne, Vinlands. geografi og ethnografi." Aarböger for nordisk Oldkyndighed, 2nd series, 2nd vol., 1889. — A. M. Reeves: "The Finding of Wineland the Good". London 1890. Jos. Fischer: "Die Entdeckungen der Normannen in Amerika". Freiburg 1902. "The Discoveries of the Norsemen in America". London 1903. — The latitude of Vineland has been calculated on the basis of the saga's statements by the astronomers Geelmuyden and Phythian (America), who

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With respect to the Skrælings in these lands, Storm has tried to prove that they were not Eskimo, but Indian tribes that the old discoverers came across. His arguments, however, do not seem to me to be quite convincing, especially because the information given by the sagas about these natives is too scanty and too general to serve as a certain basis for any identification whatever. They might have been Eskimo as well as Indians; if the latter, then a tribe not known at present, which used skin-boats for rowing out on the open sea. For it is scarcely as insignificant a feature as Storm would make it out to be, when it is related in the saga that these Skrælings used skin-boats (huðkeipar), just as at present the Eskimo and no other people do. This point is too characteristic to be accidental or erroneous. There is really most reason to assume that the Eskimo are meant, especially since it seems certain that they have formerly dwelt farther south on the eastern coast of America than they do now. Now they are not found south of 47° N. lat. (Hamilton Inlet in Labrador)*).

Read, for instance, Baron de Lahontan, the emigrant's description of his travels, dating from about the year 1700, where he tells about the Eskimo in Canada, and you will already find them farther south on the map. I shall quote a part of this book, which gives a good idea of the way in which the French settlers looked upon the wild natives**):

De l'autre côté du Fleuve (Saint Laurent) on voit la grande terre de Labrador ou des Eskimaux, qui sont des Peuples si féroces qu'on n'a jamais pû les humaniser ..... Les Danois sont les premiers qui l'ont découverte; elle est

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both independently of each other came to the result 49° N. lat. as the extreme northern limit to which the eykt and dagmál-positions could refer (cf. Fischer u. s. p. 100).

*) cf. F. Russel and H. M. Huxley: "A Comparative Study of the Physical Structure of the Labrador Eskimos and the New England Indians" (Proc. Amer. Assoc. for the Adv. of Science, Vol. 48, 1899).

**) Baron de Lahontan: "Memoires de l'Amérique septentrionale". 1703. Vol. II, p. 9 ff.

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remplie de Ports, de Havres & de Bayes, où les Barques de Quebec ont accoûtumé d'aller faire la troque de peaux de Loups marins durant l'Été avec ces Sauvages. Voici comment elle ce fait, dès que ces Barques ont moüillé l'ancre, ces Démons viennent à bord dans de petits Canots de peaux de Loups marins cousuës ensemble, qui sont faits à peu près comme des navettes de tisseran, au milieu desquels on voit un trou en forme de celui d'une bourse où ils se renferment assis sur les talons avec des cordes. Ils rament de cette manière avec des petites palétes, tantôt à droit & tantôt à gauche, sans pancher le corps, crainte de renverser ..... Ils est constant qu'ils font plus de trente mille Combattants mais si lâches & si poltrons que cinq cens Clistinos de la Baye de Hudson ont accoûtumé d'en battre cinq ou six mille. Leur Païs est grand, car il s'étend depuis la Côte qui est vis à vis des Isles de Mingan, jusques au Détroit de Hudson. Ils passent tous les jours à l'Isle de Terre-Neuve par le Détroit de Bellisle qui n'a que sept lieuës de traverse, & s'ils ne viennent pas jusqu'à Plaisance, c'est qu'ils craignent d'y trouver d'autres Sauvages.

Isles de Mingan is the name of some small islands in the Gulf of St. Lawrence between Anticosti Island and the northern shore. Here — at 50° N. lat. — was the southern limit for the Eskimo in the year 1700. To the west, lived the Papinaki Indians of the Algonkin Tribe. That the Eskimo frequently made expeditions to Newfoundland we also know from the first missionaries who came to Labrador (1764)*).

There are traces which point perhaps still farther south. In the earlier home of the Micmac Indians in New Brunswick, south of the St. Lawrence River, lies a little river at 46° 40′ N. lat. called Nipisiguit**), a name which to a striking degree

*) D. Crantz: Historie von Grönland (1770) Vol. III, p. 313: "Ich habe auf der Nordost-Huk von Terre Neuve, wo sie [the Eskimos] doch nur des Handelns oder Stehlens halber von Labrador herüber kommen, ungefähr 200 gesehen" (cf. pp. 297—298, 318).

**) Thus on a map of Canada, signed Echelles 1755, in the Royal Library of Copenhagen, Atlas Americanæ Tom. LI, no. 41. — Likewise in the synoptic map in compte rendu du Congrès International des Américanistes, Copenhague 1883. — On a map signed Carte du Canada etc. par Guillaume de l'Isle (Amsterdam). Atlas Americanæ Tom. LI, no. 40, Labrador is designated as terre des Eskimeaux, and in the south-western part of Newfoundland stands "Grands Eskimeaux".

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resembles the Greenlandic place-name *Nøpisät**), which signifies "the wolf fish" (Nipisiguit = the small wolf fish?). — Also such a place-name as Tadoussak**) west of the Papinaki's territory looks very Eskimoic. They may be Eskimo names adopted by the Indians who came later, and which thus testify to the fact that the territory of the Eskimo in earlier times stretched farther south (and west) than it does now.

Of more curiosity than historical value is the tradition about the four words of the Skræling language which the captive Skræling children taught the old Norse sailors. Such foreign words which are handed down from mouth to mouth through long periods of time cannot possibly avoid becoming strongly corrupted. Storm thought he was able to show a resemblance between them and some few insignificant remains which have been preserved of an Indian language formerly spoken in Newfoundland (the Beothuks belonging to the Micmac Tribe of Indians). But it is daring to build any argument on such unsafe ground. It would be quite a different matter if the words handed down reminded us of a language which is now spoken and well-known, as for instance the Eskimo language. But on the other hand, the reasons for assuming them to be Eskimo are so slight that they can scarcely be taken into consideration. I can only state that all in all there is no reason why the Skræling words in question should not have been Eskimo***).

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*) In Poul Egede's: "Efterretninger om Grönland" (Journal 1721—1788): Nippiset, Nepisene (pp. 25, 180, 229).

**) Lahontan, v. s. Vol. II, Carte generale.

***) The words occur with the following variants in the old manuscripts: the name of the children's mother Vætilldi (Vætthildi, Vetthildi, Veihildi, Veinhildi), the name of their father: Uvæge (Vægi, Ægi, Ovægi, Ovæe) the names of their "kings": Avaldamon (Avalldumon, Avalldaina, Avalldanía) and Valldidìda (Avaldidìda), cf. "Grönlands historiske Mindesmærker" Vol. I, p. 437. In the Eskimo language, *uva* means that there! (something pointed at with the finger or indicated with the eye), *uve*, husband, *ava*, north, the suffix *-miut* or *-miun*, inhabitants of a

Thus there is neither linguistically, geographically nor historically any objection to be urged against the supposition that the Skrælings, whom the old Icelanders in the saga claim to have seen on the coasts of Newfoundland and Nova Scotia about the year 1000, really were Eskimo.

When did the Norsemen first come across the Eskimo in Greenland?

In "Speculum regale", which otherwise carefully and at length describes the curiosities of Greenland, there is not the slightest indication of the existence of Skrælings. This work was written about 1250*).

But not long after this we have the first account of how fresh traces of Skrælings had been found in the north of Greenland. This is the account given by the Icelandic "lögmaðr" Haukr Erlendsson, who in the year 1320 collected and copied historical documents referring to Iceland and Norway**). His work (Hauksbók) contained a letter***), where it was indirectly stated that the Norse Greenlanders were accustomed to start out on long expeditions toward the north from their colonies in South Greenland. This is confirmed by some extant fragments of a couple of sagas which are otherwise lost. They tell us that all the stórbœndr (chief landowners) in Greenland owned big ships which had been built to be sent to the northern

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place, *-mut* or *-mun*: to, toward. There are elements in the four Skræling words which remind us of these Eskimo words.

*) F. Jónsson: "Den oldnorske og oldislandske litteraturs historie" (1898), Vol. II, p. 995.

**) Ibid. Vol. II, p. 594.

***) Hauksbók, ed. Copenhagen 1892—96, p. 500. — Grönlands historiske Mindesmærker, Vol. III, pp. 239 ff. — Antiquitates Americanæ, Hafniæ 1837, pp. 269—276. The letter is preserved in only one copy made by the Icelander Björn Jónsson (1574—1656).

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settlements (Norðrseta) for hunting and fishing; they had huts up north, partly in Greipar and partly in Króksfjarðarheiði (Kroks Fjord's Heath); up there they got train-oil, for the sealing was better there than in South Greenland; melted seal-fat was poured into the skin-boats and further prepared; drift timber came in great quantities from the bays of Markland *). I shall give the letter in an English rendering:

*"This account wrote the priest Haldór from Greenland to the former Greenlandic priest Arnaldr, who had then become king Magnus Hakonson's court-priest on board the knar (large ship), on which Bishop Olafr traveled to Greenland. That summer when the priest Arnald left Greenland and they suffered shipwreck at Hitarnes on the (western**)) coast of Iceland, there were found out in the sea some pieces of timber which had been hewn with small hatchets or adzes, and among them one in which there sat tooth-wedges and bone-wedges. This summer there also came people from Norðrseta, who had traveled farther north than there had hitherto been any account of. They found no indications that Skrælings had stayed there, except at Króksfjarðarheiði, and people are of the opinion that it must be the shortest way for them (the Skrælings) to go, no matter where they come from. Thereupon the priests sent a ship toward the north, in order to have investigations made with regard to conditions north of the most distant region which they had yet visited; but they sailed away from Króksfjarðarheiði, until they lost sight of the coast. Then there came a south wind against them together with darkness, and they had to let the ship drift with the wind; but when the storm had passed and it became light again, they saw many islands and all kinds of game, both seals and whales and a large number of bears. They came right into the bay (hafsbotninn), and then they*

*) Grönl. hist. Mindesmærker Vol. III, pp. 243—244.

**) K. Kaalund: Historisk-topografisk Beskrivelse af Island (Kbh. 1879—1882) vol. I, p. 401.

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lost sight of the whole land, both the southern stretch of coast and the glaciers; but south of them there were also glaciers as far as they could see. There they found some indications that the Skrælings had formerly stayed in these places; but on account of the bears, they could not go ashore. Then they sailed back in three days, and there [i. e. in the place where they came] they found some remains after the Skrælings, when they came to some islands south of Snæfjall. After that they sailed south to Króksfjarðarheiði, a good day's rowing, Jakobsmassday; it froze there then at nights, but the sun shone both night and day, and it was no higher when it was in the south than that, when a man laid himself crosswise in a six-oared boat, stretched out against the railing, then the shadow of the railing which was nearest to the sun fell on his face; but at midnight it was as high as it is at home in the colony, when it is in the north-west. Then they traveled home to Garðar".

That summer when the Norse explorers came home from regions farther north than had previously been known can be exactly dated, because we are told that it happened about the same time as the shipwreck at Hitarnes, and this is known to have occurred in the year 1266*). The Skrælings themselves had not been seen; but the manner in which they are spoken about throughout the whole letter indicates that the Norsemen had the impression that they were in the vicinity of them. Perhaps the expedition mentioned in the letter, which was sent out to the northernmost regions by Greenlandic priests, was partly occasioned by fear of the Skrælings, or by a desire to become more closely acquainted with their places of habitation.

Where are *Króksfjarðarheiði* and *Snæfjall*? — The first of these, if it is not named after a man, must suggest a fjord with a remarkable bend (*krókr*), surrounded by desolate highlands

*) The Icelander Björn Jónsson's Annals of Greenland, in Grönl. hist. Mindesmærker, Vol. I, p. 83 ff., III, p. 6 ff.

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(*heiði*); the second suggests a conspicuous mountain with eternal snow, north of this fjord. The distance between them is designated as a day's rowing. There is every reason to believe that this *Norðrseta* (= northern settlement), where the Norsemen of South Greenland had erected summer dwellings, and which they visited every summer for the sake of the good sealing, was situated on the Greenland side, and not on the west side of Davis Strait, where there is always dangerous and difficult sailing*). The northernmost known monument of Norse origin is a stone with a runic inscription, which was found on the little island Kingittorsuaq (72° 55′ N. lat., about 16 miles northwest of Upernavik), and was in 1824 deposited in the National Museum in Copenhagen**). The inscription simply gives the names of the 3 men who "raised this cairn and cut the inscription, Saturday after Gagnday (April 25)". The year is uncertain. This stone was no doubt raised in memory of an unusual expedition, as a testimony to how far north the three men had penetrated. Króksfjord must have been farther south***). I make a guess that Umanak Fjord (71° N.) is the one in question. The special *krókr* might perhaps be looked for in Uwkusissät Fjord, either east of Svartenhuk Peninsula, or at the inner end of the fjord. Is *Snæfjall* Cape Svartenhuk or a mountain farther north (Qaersorsuaq close to Upernavik?)? *Hafsbotninn* "Bay of the sea" naturally makes us think of Melville Bay. It is possible that the other places are to be located farther north. But it seems certain that the Skrælings had not yet settled south of Króksfjord in the year 1266.

In the light of this fully credible account of the expedition

*) Prof. Finnur Jónsson, with whom I had a conversation with reference to this subject, expressed himself as decidedly in favour of this opinion.

**) Gr. hist. Mindesmærker III, p. 843, Plate IX, fig. 3. — Lelewell: Geographie du moyen âge, Vol. IV, 1852, p. 77.

***) I venture this assertion in spite of the fact that the astronomical calculation which is based upon the old account of the sun's position points to a higher latitude (Gr. hist. Mindesmærker Vol. III, p. 885).

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in 1266, that description of the Eskimo which is found in the so-called Historia Norwegiæ becomes more valuable. This work, which was found in the form of a manuscript in Scotland in 1849, and whose original the historians conjecture to have been written in the 13th C.*), contains, among other things, a geographical description of the northern lands. "*Beyond the Greenlanders toward the north*", we are told, "*the hunters come across a kind of small people called Scraelings: when they are wounded alive, their wound becomes white without any issue of blood, but the blood scarcely ceases to stream out of them when they are dead. They have no iron whatever and use whale-teeth for missile-weapons and sharp stones for knives.*" This certainly seems to indicate, as Fischer thinks**), that already in the 13th C., the Norsemen and the Skrælings had come into conflict with each other in North Greenland. They must have been seen not far north of Króksfjord about the year 1300; the Norsemen there prevented them from proceeding farther for the time being.

Now it is strange that just exactly from the region about Umanak Fjord we have a tradition which treats of the Greenlanders' fight on the ice with the old Norsemen (*qawλuna·it*). This tradition was sent to Dr. Rink in the years 1861—63 by the "kateket" Abraham Eliasen of Umanak, who had written it down***). In it, the Greenlanders are called *innuit*, not *kala·λit*, as in South Greenland. According to the tradition, it seems to have been the Norsemen who gave rise to the struggle, because they had pursued some little girls who had been out to fetch water. These girls came running home and shouted, "They are

*) F. Jónsson: Den oldnorske og oldisl. Litteratura Historie (1900) Vol. II, p. 602. — G. Storm: Monumenta historica Norwegicae. Christiania 1888. The above quotation is found in this work pp. 76 and 205.

**) J. Fischer, u. s. p. 64.

***) Rink: Eskimoiske Eventyr og Sagn. Copenhagen 1866, p. 354, cf. pp. 362 ff. and p. 206. — Tales and Traditions of the Eskimo. London 1875, p. 320—21.

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attacking us!" The Greenlanders fled and hid themselves between the heaps of stones, yet the Norsemen managed to get hold of some of them and maltreated them. The Greenlanders, however, by means of artifice, lured their enemies out on the slippery fjord-ice, where they could not stand firmly, and thus the Skrælings succeeded in overcoming them one at a time and killed them all. — This is the only tradition that has been found in North Greenland about the old Norsemen. We shall see later that in South Greenland are preserved more abundant traditions about them.

In the course of the 14th C., the Greenland Eskimo gradually moved farther south, either because the Norsemen ceased their expeditions to the north so that the way to the south lay open to them, or because the Eskimo population had increased — perhaps through new immigrations from the north. At all events, the Eskimo had begun to come into closer contact with the Norse inhabitants. The first encounter between them that we hear about took place in 1379, when the invading people made a hostile attack on the Norsemen, of course this first time on the northernmost colony (Vesterbygd, or now Godthaab), killed 18 men and took 2 boys captive, whom they kept as slaves*). Then they withdrew again toward the north.

That Vesterbygd was completely destroyed by the Skrælings, we know from Ivar Bårdsson (Bårdtszen or Bere), who after 1341 was for many years the director of the bishop's estate, Garðar, in Greenland, and to whom we are indebted for a topographical description of Greenland, which was probably written down on the basis of his oral communications after his return to Norway (about 1370)**). "*Now the Skrælings possess all*

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*) According to the account in the Icelandic annals, cf. Gr. hist Mind. III, p. 32, year 1379: "Skrælíngjar herjuðu á Grœnlendínga ok drápu af þeim 18 menn ok tóku tvo sveina ok þrælkuðu".

**) F. Jónsson: "Den islandsk-grönlandske Kolonis historie" (Nordisk Tidskrift för Vetenskap, Konst och Industri 1893). — Ivar's description is

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Vesterbygd", we read here. Ivar himself had been one of the men in Greenland whom the governor had appointed to go to Vesterbygd to expel the Skrælings. They found Vesterbygd entirely laid waste and completely deserted, so it seems as if the Skrælings, for the time being, had withdrawn.

The next account that we have of a conflict between Skrælings and Norsemen goes back to the year 1418. In a bull by Pope Nicolai V dated Sept. 20, 1448 *), it is stated that "*the barbarians from the adjacent coasts of the heathen arrived 30 years ago with a fleet, attacked the Norman population, destroyed a number of their churches and took many captives. But most of these captives returned later from their captivity and reconstructed their dwellings*". — The attack this time was on Østerbygd, and, as it is seen, the population here was not altogether exterminated, but recovered again, even if it was only to die a lingering death.

At that time, the communication with Iceland and Norway had already long been inconsiderable. This is evident from the scarcity of information about the ships which sailed to Greenland. According to the Icelandic annals, there came a ship to Straumsfjord in Iceland in 1347, which was on the way from Greenland to Markland (Newfoundland), but which had been driven by a storm to Iceland. In 1368, a ship brought the last bishop (Alfr) to Greenland. He lived there ten years, but the news of his death did not rearch Norway until in the year 1383 **). In 1385 it is related that four ships sailed to Greenland and remained there two winters. One of them was commanded by Björn Einarson Jorsalafari, who in Greenland took two young "trolls", that is, Eskimos, to himself ***).

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found in Gr. hist. Mindesm. III, p. 248 ff., cf. pp. 461 ff. and in Meddelelser o. Gr. XX, p. 322 ff.

*) Liber XXIII, Registri Bullarum p. 251, cf. Gr. hist. Mindesm. III, 166, 466.

**) F. Jónsson: Den isl.-grönl. kolonis historie p. 543, in Nordisk Tidskrift för Vetenskap, Konst och Industri. 1893.

***) Gr. hist. Mindesm. III, 437. On the way home from Jerusalem, he lost

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In the years 1406 and 1410 there are again accounts of voyages to Greenland, but they are the last that are historically certain. Yet the papal bull quoted above assumes that the connection between the Norse colony and the rest of Europe was still unbroken in the middle of the 15th Century, and that the colony had not yet at that time been exterminated. — From about the year 1450 we also have an account of a certain Björn Thorleifson, who was wrecked on the coast of Greenland and was rescued by two trolls*), and just as mythical are the accounts of the expeditions of the "pirates", Pining and Pothorst, to Greenland about the year 1490**). — Finally must be mentioned the document brought to light by Jelič, which was written by Pope Alexander VI (1492 or 1493)***), and according to which there had come no ship to the Greenlandic colony in 80 years; as a result, the colony had fallen into misery; now a bishop was to be appointed to go over there and bring them help. But there is no indication that this plan was carried out.

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his way and came to Greenland: "*The Greenlanders made Björn Bonde a grant of Eriksfjord's district while he stayed there* [and helped him in several other ways]. *At last he was benefited by the chance that he had happened to rescue two trolls, a young boy and his sister, from a rock which was washed over by the sea at high tide. They took an oath of allegiance to him and from that time he did not lack provisions, for they were experienced in all kinds of hunting and fishing, no matter what he needed or desired. The girl-troll considered it the greatest favour when she was allowed to carry and pet the little boy baby which her mistress had just given birth to. She also wanted to wear a head-dress which resembled that of her mistress, but she made it of whale's gut. This brother and sister killed themselves and threw themselves down from the cliffs into the sea, when they were prohibited from following along with Björn Bonde, their beloved master, to Iceland.*" No one who knows the Eskimo will doubt that the trolls here mentioned were Eskimo.

*) Gr. hist Mindesm. III, 468 ff.

**) Gr. hist. Mindesm. III, 475—481. (Olaus Magnus.)

***) Quoted by Fischer u. s. pp. 49 ff.

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This was the state of knowledge about Greenland at the end of the middle ages, at the dawn of the era of great discoveries. By this time all connection between Greenland and the Scandinavian countries had probably been broken off, and the tradition about it was very vague. The name "Skrælings" does not occur outside of the Icelandic-Norwegian saga literature*). But in foreign works of that period, the inhabitants of Greenland are spoken of as pygmies or as pirates, and the reference is undoubtedly to Eskimo immigrants. Just as it must be supposed that the knowledge about Greenland and adjacent lands kept its firmest hold on the memory in the northern countries, so it is also probable that it was from there that it spread to the south, where it left traces in the old maps and geographies.

At all events, mediæval cartography shows one certain instance of the direct influence exerted by northern tradition on the cosmography of the period, as represented in the so-called Ptolemaic maps and the old Italian Portulans. I refer to the change which took place in the cosmographical representation of the northernmost parts of the world, after Cardinal Filiaster in Nancy had become acquainted with the Danish "mathematicus", i. e. drawer of maps, Claudius Clavus (Niger). He had, as it seems, been asked by the Danish king, Erik of Pomerania, to draw a map, and after that he traveled abroad**). According to G. Storm***), he is supposed to have made a stay in Italy about 1425, and he may there have become acquainted with the Ptolemaic maps, precious things, which were probably not accessible in Denmark at that time. What Clavus knew

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*) The first time it again turns up is on a map drawn by a Scandinavian historian, Olaus Magnus (Historia de gentium septentrionalium variis conditionibus. Basel 1567). Under Greenland is found the following inscription: Hic habitant Pygmei vulgo Screlinger dicti (cf. Nordenskiöld: Studier och forskninger. Stockholm 1884, p. 34 ff.).

**) E. Erslev: "Jylland". Copenhagen 1886, p. 136.

***) In Ymer 1891, cf. J. Fischer, u. s. p. 66.

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from home about the north, he may have added to the old maps while he was in Italy.

We see the result a short time after, namely in the well-known, valuable Ptolemaeus MS, which Cardinal Filiaster caused to be made in the year 1427, and which is now preserved in the City Library of Nancy. On the map of the northern regions which is found there*), the northern lands, including Greenland, are surprisingly correct in form and situation, when compared with the older maps. There are indications enough that this change is due to the Danish map-drawer, whether Filiaster has directly employed him to draw this map for him, or he has only used a copy of one of Clavus's own maps. For a time, this new type of map was continually in conflict with the old. The incorrect representation was repeated in later editions of Ptolemaeus (Nic. Donis or, as Fischer calls him, Donnus Nikolaus, Ulm 1482 and 1486), and seems even still later to have become especially wide-spread through Waldseemüller's map of the world 1507**).

Clavus's map, on the other hand, forms the basis of that representation of the northernmost parts of the world given on Joh. Schöner's globes, which in turn have influenced Merkator's and Ortelius's later cartographical works (through Waldseemüller's Carta marina 1516, where Greenland is correctly placed***). Also that map of the northern lands from the Zamoisky Library in Warschau, which Nordenskiöld has called attention to, as likewise several Florentine manuscript-maps from the 15th C. belong to this type†), which, however, first became firmly established at the appearance of the Zeno map in 1558.

Of great interest are the place-names which are found

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*) A good facsimile of it together with the inscriptions is to be found in Nordenskiöld: Studier och forskninger, Stockholm 1883, pp. 62 ff.

**) Fischer, u. s. pp. 86 ff.

***) Ib. pp. 95—97.

†) Ib. pp. 71—72.

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attached to the northern lands on this type of map, and which have proved to be pure Danish words*). A list of these with variants from various Italian editions is found, for instance, in Nordenskiöld's Periplus. With respect to the names in Greenland, which are especially attached to rivers and promontories, they appear to be pretty corrupt and the majority of them have never been satisfactorily interpreted. The name Nice-fluvius given to one of the southernmost rivers on the west coast undeniably suggests the Old Norse hnísa, a porpoise (delphinus phocaceus), which to this day occurs in the Greenlandic Eskimo language as an old Scandinavian loan-word with its original meaning retained. If this is accidental or not must still remain an open question.

On the Nancy map, we read at the top to the left, in the northernmost part of Greenland: "*Carelorum infidelium regio maxime septentrionalis*", „the region of the heathen Careli fartherst north". Both Storm and Fischer maintain that Nordenskiöld was wrong when he assumed this to refer to the Finnish Careli. For they had already before the end of the 13th C. been converted to Christianity by Thorgil Knutson, so that the expression "heathen" would no longer apply to them, to say nothing of the fact that their land lay elsewhere. The heathen Careli in Greenland cannot be anything but the Eskimo.

Claudius Clavus knew more about them than what has been adopted in the Nancy Codex. He is especially mentioned in Schoner's and Irenicus's geographical works from the 16th C. as their authority**) for their accounts of Greenland.

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*) Thus for instance the rivers from Lifland and farther north: fursta fl., avenas fl., trediena fl., fierdas fl. (i. e. first, second, third, fourth river).

**) These two unique passages deserve to be quoted here:

Franciscus Irenicus: Germaniae exegeseos volumina XII. Hagenoae (i. e. Hagenau in Elsass) 1518: "*Grolandiae praeterea insulae Chersonesus dependet a terra inaccessibili a parte versus septentrionem vel ignota propter glaciem. Proficiscuntur tamen Caroli infideles quotidie cum exercitu in Grolandiam et hoc absque dubio ex altera*

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They relate how the heathen Careli every day come with their military force from the unknown regions of the north to Greenland. They are dwarfs who use skin-boats. Claudius Clavus himself had seen some of them, who had been taken captive on the sea in a little skin-boat, which was at that time still preserved in the cathedral at Nidaros (Drontheim in Norway). In the same place, there is also a long skin-boat which had been seized in olden times together with some pygmies.

This is the first time we have distinct mention of the big and the little skin-boat, the kajak and the umiak. The account agrees in a remarkable manner with the information given by the Swedish historian Olaus Magnus. He writes in his *Historia de gentium septentrionalium variis conditionibus (Romæ 1555, Basil 1567)* in Book II, Ch. 9, that he himself in the year 1505 saw two skin-boats fastened to the wall, as if for display, over the west entrance of Oslo (Drontheim) Cathedral, and that these boats had been seized from the natives of Greenland in the days of King Hakon (probably Hakon IV, who reigned in Norway from 1355 to 1380). Of no less interest is his description of the human habitations which are seen on the coast of Greenland and "which resemble hulls of ships with the keel uppermost; they are built of the ribs of whales and are covered with moss and heather". Above the chapter:

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parte poli septentrionalis. Non igitur Oceanus alluit limen terrae recte sub polo ut omnes priscorum auctores profitentur veluti honestissime nobis Niger mathematicus ostendit." (Liber X, p. CC.)

J. Schoner: Luculentissima quaedam terrae totius descriptio 1519: "*Et ab illis* [scil. *Uildlappmanni in Pilappelandia*] *ad occasum morantur Pigmei parvi longitudine cubitales quos vidit Claudius Chlaus Niger captos in mari in navicula modica de corio praeparata, quae hac nostra tempestate in ecclesia Cathedrali Nodrosiae reservatur. Habent ibidem navem longam etiam de corio quae quondam cum Pigmeis etiam capta erat. Haec itaque portio p*[*arte*] *maxima Ptho*-*l*[*emaeo*] *incognita permansit. Sunt utique asperrimae et frigidissimae montuosae et sylvestres ac nemorosae regiones, quarum incolae plus de piscatura et venatione vivunt quam de pane, quia raro ibi annona ob frigoris excellentiam.*" (Regiones asperrimae.)

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De pygmaeis Gruntlandiae is an illustration representing a European fighting with a native dwarf (Eskimo).

Thus we have found evidence of the advance of the Eskimo along the west coast of Greenland all the way from the account in Historia Norwegiæ dating from the 13th C. down to these late accounts from the 16th C.

However scattered and unsatisfactory they are, yet they furnish certain proof that all the way down to the beginning of the new era, indeed far into the 16th C., there still continued to exist a living tradition in the Scandinavian lands about Greenland and about its strange inhabitants, who had gradually penetrated into the land from the north.

The Eskimo invasion of Greenland did not take place without some bloody conflicts, which, considering this race's cowardly character, explain why it took such a long time for them to penetrate to the southernmost part of Greenland. The invasion has probably taken place through repeated advances from the west, which have been occasioned by shiftings in the territory of the more western Eskimo. It is possible that in South Greenland they have mingled with the few Norsemen who still remained there after all communication with the rest of the world had ceased.

It was at this point that English sailors, driven by the hope of finding a new way to India, rediscovered Greenland, and brought home fresh accounts of the land (Frobisher's first voyage 1576, John Davis's first voyage 1585). Herewith begins a new section of the history of this land and its inhabitants.

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The only place, so far as I know, within Eskimo territory, where there are certain traces of the old Norsemen, is in the southernmost part of the west coast of Greenland. Here are to be seen, as has been mentioned, a large number of ruins of Icelandic origin, which were examined in 1880 by G. Holm *) and more recently by Dan. Bruun **). In this district also, Dr. Rink, in about the year 1850, wrote down 5 old Eskimo tales about the first and last conflicts between the two peoples ***). Internal evidence in these tales shows that it is really the old Icelanders that are meant, and not later discoverers; among other things, the name of one of the old Norse chiefs *Olave* (Old Norse *Ólafr*) is preserved, which indicates that the tradition of these tales is at least 500 years old.

Finally, in the South Greenlandic language, there are some words which can and may be Norse loanwords. Hans Egede already calls attention to this fact †). They are all (with the exception of *kona*) words which in form stand isolated in the Greenlandic language, and they are not used much outside of South Greenland. *kona* (Egede's vocab.) = mulier, uxor, is no longer used and was a rare word already in Egede's time ††). But its existence is also testified to by Olearius's list of words (konâ) from 1656. From Old Norse kona (woman)? *sava* or *savaq*, a sheep, (Fabricius's vocab.), *ni·sa* or *ni·saq*, a porpoise, *kuan·eq*, angelica archangelica, could correspond to Old Norse sauðr

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*) Meddelelser om Grönland VI, 1883.

**) Ib. XVI, 1896.

***) H. Rink: Esk. eventyr og sagn 1866. — Tales and Traditions of the Eskimo (Edinburgh and London 1875) no. 3—4.

†) "Det gamle Grönlands nye Perlustration" 1729 (written 1724): "*It is quite certain that these present Greenlandic inhabitants, as far as the west coast is concerned, are principally the descendants of the old so-called Skrœlings. But that some of the Norsemen have mixed with them and become naturalized in the course of time may be concluded from some few Norse words, agreeing with our language both in form and meaning.*" (p. 23.)

††) u. s. p. 64.

(gen. sauða), hnísa and hvönn (plur. hvannir) New Norwegian kvanne. The presence of these same words in the language of Labrador may be explained by the fact that the first missionaries, who came from Greenland, introduced them there. The meaning of *kuan·eq* in Labrador, however, is not angelica, but a kind of edible seaweed, and *sava* has there the form *sa·gaq* (vocab. *saugak*).

kala·leq, a South Greenlander, just about corresponds to Old Norse skræling*), which, when pronounced by a Greenlander, would become **sakala·leq*. The first thing that might make the connection between these two words seem doubtful is the absence of the first syllable (*sa-*) in the Eskimo word, but the Greenlanders themselves explained to Egede that they were called by that name by the old Norsemen (cf. Egede's vocab. under *karálek*, Groenlandus indigena. Ita vocatus se dictitant a priscis Christianis, terræ hujus qvondam incolis). In Iceland, the word at present signifies: a churl, a coarse brutal person. In Denmark, it is rather used of a cowed or effeminate person and is perhaps connected with the adjective *skral*. The etymology is uncertain, and the Danish and Icelandic words are possibly to be traced to different origins. In Icelandic, it seems most plausible to connect it with skrækr, scream, and skrækja, to scream (Fritzner's dictionary); in modern Norwegian, there is a word skræla = Swedish and Danish skrålе, to squall (denominative of skrål); the last word is not known from the Old Icelandic language, but still it may have existed there once and have given rise to the Greenlandic name. The first discoverers of modern times often tell about the noise and screams which the Eskimo raised at the sight of them, for instance John Davis on his first voyage (1585): "The people of the countrey hauing espied us, mad a lamentable noise, as we thought, with great outcries and

*) Fritzner's Dictionary has also the form skrelingr once (Chron. Norvegiæ).

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skreechings: we hearing them, thought it had bene the houling of wolues"*). — If it is permissible to draw any conclusion from Claudius Clavus's Careli, and if this name has not simply been transferred to Greenland from the Careli of Finland, one cannot but wonder at the strong resemblance between this name and Egede's *kara·leq*; *r* no doubt stands for a point r, so that the word in reality almost coincides with the other existing form *kala·leq*. Where has Clavus, who seems to have been so unusually well informed in matters of Greenlandic geography, got this form of the name? Is it possible that already at that time the Eskimo *kara·leq* was known in the northern countries alongside of the Icelandic-Norwegian skræling or skreling? If so, the uncertainty of the origin of the name would only be increased, and there would be one more reason for supposing that it is originally an Eskimo word which has been adopted by the Scandinavians and by false etymology changed to *skræling*. Yet the phonetical characteristics of the two languages make this hypothesis too seem rather uncertain. If, however, this word has been adopted in the Eskimo language from the Icelandic, it must have lost its initial s early.

We may no doubt take for granted that communication between the various Eskimo tribes was greater, perhaps far greater, in earlier times than at present**). The accounts of

*) Hakluyt Voyages III, p. 134, cf. Frobisher's second voyage 1577, ib. p. 101.

**) It is suggestive to read in Cranz about how the Labrador Eskimo, when the missionaries for the first time mentioned the Greenlanders and said that they came from the *Kara·lits*, immediately seemed to know this name and shouted: "the Kara·lit up north there are evil people". This idea that the Kara·lit were a people who lived in the north, leads us to a surmise as to whether this name could have come to the Labrador Eskimo from the north, through communication north of the Strait. D. Cranz: Der Grönländischen Historie (1770) III, pp. 298 ff.

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the Egedes about the expeditions of the Greenlanders give us that impression, and it is confirmed by information in later works about those Eskimo who have not yet been hemmed in by Christian civilization, but who have kept intact the free habits of their ancestors. Both Bessels and Peary relate that on the Greenland side of Smith Sound, they found families who had come there from Ellesmere Land from the west; thus came Itokirssuk (i. e. *iwtoqerssoq*, he who stammers in speaking) in 1868 together with several others from Baffin Land. Peary mentions that twice within the memory of living men has there been immigration from western tribes*). Since neither Inglefield (1852) nor Sverdrup (1899—1902) came across any Eskimo on the coasts of Ellesmere Land or in Jones Sound, the immigrating families must have come from some place still farther away (Baffins Land?). "The Smith Sound Eskimo", writes Kroeber, "call these western people Adlet"; then, having mentioned a number of differences between the two tribes, he continues: "In the language, too, the Adlet are said to differ from the Smith Sound tribe. When Qumunapik first arrived at Smith Sound, he needed signs to make himself understood. Instead of "naiga" he said "hāika" or "hāiqa" for "no" (Baffin Land "aqai")." — Fr. Boas, the distinguished investigator of the Eskimo in Baffins Land, relates**) that the southernmost inhabitants of this island cross Lancaster Sound at the approach of winter, and pass the winter on the east side of North Devon. "While here, they keep up some intercourse with the inhabitants of Umingman Nuna (Ellesmere Land). — It is said that they reach the northern shore, whence a long, narrow peninsula, Nedlung, stretches toward Ellesmere Land. Through the narrow passage which separates

*) Peary: Northward over the Great Ice 1898. — A. L. Kroeber: The Eskimo of Smith Sound, in Bull. Amer. Mus. Nat. Hist. Vol. XII, 1899, p. 267.

**) Fr. Boas: The Central Eskimo (Sixth Ann. Rep. Bur. Ethnol. Smithson. Inst. Washington 1888) p. 443.

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Tudjan from Nedlung, runs a very swift tide, which keeps open a water hole throughout the winter. All around this place, the ice wastes quickly in the spring, and a large basin is formed, which abounds with seals. Only that part of the peninsula which lies nearest North Devon is high and steep, presenting a bold face. Farther north it is rather low. — Having reached Umingman Nuna, the Eskimo who gave me this information affirm that they fell in with a small tribe who resided on this shore. Here they lived for some time, as there was an abundance of seals during the whole year. Farther northwest is a large fjord, *Kangertluksiaq*, off which an island is found, *Qeqertakadlinang* by name. The Eskimo do not visit the land on the other side of the fjord, as bears are said to be very numerous and large there. Though these migrations to Jones Sound do not occur very frequently, they have by no means been discontinued. For instance, a family which was well known to me has visited Smith Sound, and the father of some friends of a resident of Cumberland Sound returned about fifteen years ago from a long stay on Tudjan and Nedlung."

It seems to me that this description of the unknown regions in the north written about 20 years ago on the basis of the accounts of the natives of Baffin Land is in a striking manner confirmed by Sverdrup's latest discoveries (1899—1902), with but the one difference that Sverdrup did not see any Eskimo in Ellesmere Land, but only traces of them. On the maps showing the geographical results of the expedition, which were published by G. Isachsen in Petermanns Mittheilungen, North Devon does end in a peninsula, whereby Jones Sound is greatly narrowed, and through the sound runs a swift tide. *Kangertluksiaq*, the large fjord mentioned, with the island lying just outside, is probably one of the fjords on the west side of Ellesmere Land, where the Norwegian expedition found the places which were richest in animal and plant life. From here, there is only a little distance to Smith Sound and to the northern-

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most coast of Greenland. That this has been the route to Greenland in past times is certain, and it is equally certain that sporadic immigrations have taken place all the way down to our days. It may then be assumed that only a few hundred years ago there was more frequent intercourse between the tribes dwelling on both sides of Davis Strait, and that in the 14th Century, when the Eskimo first began to press southward from the northernmost parts of Greenland, the two tribes had more in common with respect to language and customs than is the case to-day. The separation between the Greenland Eskimo and the Labrador Eskimo is perhaps after all not much older than 600 years, and to this supposition the great resemblance which, so far as I know, still exists between the languages of these tribes also seems to point.

As for the Greenlanders themselves, they by no means seem to be homogeneous. It was already brought to light as a result of the anthropological investigations led by the Commission in the years 1885—1888 that there existed a distinct tribal difference between the northernmost Greenlanders in the Upernavik District and the remaining population of the west coast*). In the case of the population of the east coast, it was more difficult to decide where they belonged, perhaps because the material for investigation was rather scanty.

Linguistically there is a pretty sharp division between Upernavik and Umanak, so this is also another reason for assuming that the population in the north has immigrated later than the population in the south, and that it has sprung from a different tribe.

I consider it not impossible that the isolated tribe at Angmagssalik (pronounce: *ämmassalik*) on the east coast is another off-shoot of the same migratory horde, although per-

*) Sören Hansen: Bidrag til Vestgrönlændernes Anthropologi, Meddelelser om Grönland Vol. VII, pp. 203—205, 229—230. — Bidrag til Østgrønlændernes Anthropologi, Meddelelser om Grönland Vol. X, 1888.

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haps it has mixed with West Greenlanders from the south. The traces that have been found of Eskimo migrations do not lie far apart along the northernmost coasts on both sides of the land.

Many traces, also of permanent settlement, have been found in Grinnell Land and Grant Land, which are separated from the northernmost part of Greenland only by the narrow Kennedy and Robeson Channels. Greely found remains of houses at about 81° 45′ N. lat. at Lake Hazen and Ruggles River*). Nares found traces of a large Eskimo settlement at Radmore Harbour in Rawlings Bay (80° 15′ N. lat.), and traces of tent-places much farther north, likewise a large wooden sledge and a stone lamp only a few miles south of 82° N. lat. "Northwards from Cape Beechey no trace of man was discovered"**).

On the Greenland side just opposite to these points, the American North Pole expedition (1871—1873) found many traces of wandering Eskimo, for instance tent-places at Thank God Harbour in Polaris Bay (81° 30′) and traces of permanent habitation on Offley Islands in the northern part of Petermann's Fjord***). This is about four degrees north of the northernmost settlement on the west coast (Whale Sound), and it lies north of Humboldt's Glacier, which by the Ita-Eskimo is considered impassible.

On the east coast of Greenland, the northernmost tent-places which have hitherto been found lie on the south side of Cape Ritter, slightly north of 76° N. lat. Large numbers of such places have been found on the southern point of Shannon Island (75°—75° 30′), which testifies to the fact that the island has been visited every summer through a long period of years. That there have been permanent settlements too in these parts

*) Greely: Three years of Arctic Service 1881—1884 (London 1886) Vol. I, pp. 379—383, 406.

**) Nares: Voyage to the Polar Sea 1875—1876 (London 1878) Vol. II, pp. 146—149 and pp. 187—191 (H. W. Feilden).

***) Bessels: Die amerikanische Nordpolexpedition (Leipzig 1879) pp. 136, 280.

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we may conclude from the many winter-huts and graves which have been found on Klein Pendulum Island and around the inner end of Franz Josefs Fjord*). This coast deserves especial attention on the part of the historian because it was here that Clavering in 1823 fell in with a little Eskimo tribe consisting of 12 individuals, a flock whose existence was no doubt just as great a surprise for the Europeans as the existence of the Europeans was for them, and which has probably since died out. At all events, the next time this stretch of coast was visited, namely by the German-Austrian expedition (1869—1870), there were no longer any living beings to be found there.

That part of the east coast which lies north of 77° N. lat. has hitherto not been explored. Along all the southern part of the east coast, which has been explored and charted by Danish naval officers (Ryder, Amdrup, Holm, Garde), have been found partly indications that Eskimo have formerly lived there, partly — from 66° — Eskimo still living.

Angmagssalik is the northernmost and now the only inhabited point on the east coast. The inhabitants of this place were first discovered and examined in 1883—1885 by G. Holm, who gave an excellent account of the social and ethnographical conditions prevailing among these people**). Unfortunately there is not much information to be had about their language. According to the anthropological investigations, the East Greenlanders may as a whole be said to be "a pure and unmixed Eskimo tribe ..., which physically surpasses most of the other East Eskimo and especially the other Greenlandic tribes"***).

The inhabitants of Angmagssalik themselves have no tradition about their origin, as to whether they have come from the north or from the south. Among their many folk-tales,

*) Die Zweite deutsche Nordpolarfart 1869—1870 (Leipzig 1873—74) Vol. I, pp. 335, 448, 387 ff.

**) G. Holm: Ethnologisk skizze af Angmagssalikerne. Den østgrønlandske Expedition 1883—1885. Meddelelser om Grönl. Vol. 10) 1888).

***) Sören Hansen: Bidrag til Østgrönlændernes Anthropologi. Ibd. p. 41.

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there is one about a certain *Uiarteq*, who, together with his wife, traveled about the country, namely from Angmagssalik southward, then up the west coast, where they passed the winter, and on to the northern end of the land; from there, along a steep coast, where there ran a swift tide, to a large fjord, where there were no seals, but many white whales and narwhales; from there, farther on to the hero *Ka·sasik*, "who lived not far north of Angmagssalik" and "who caught bears in stone traps just as we capture foxes here"; from there, *Uiarteq* traveled home to Angmagssalik, thus returning home from the north*). This is only a short résumé of the tale, which gives an account of various adventures on the way. I do not overestimate the importance of such oral tradition, exposed as it is to both interpolations and other changes of various kinds, but I consider it worth noticing in this connection that this tale implies that the East Greenlanders conceive of their land as an island. — With respect to their language, I may call attention to the following information in Cranz**), which doubtless refers to the inhabitants of Angmagssalik. The Eskimo of the east coast, he says, quite frequently made voyages around the southern point of Greenland in order to trade on the west coast. In 1762, there came some from a greater distance than usual, who in contrast to the usual southerners (from the east coast) were called northerners. They are described as a simple, timid, very little moralized people with black hair and without beards; they "speak Greenlandic, but with a different pronunciation, which resembles somewhat the pronunciation of the Greenlanders in Disko Bay"; it is even added in a remark that "our Greenlanders cannot understand their language when they speak together among themselves".

That the language spoken at Angmagssalik has for a long time differed from South Greenlandic I have no doubt. It would

*) Meddelelser om Grönland, Vol. X, pp. 255 and 333; cf. p. 259.
**) u. s. Vol. I, p. 343—348.

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be of the greatest significance for the understanding of the relationship between the different dialects in Greenland, and for the elucidation of Eskimo migrations, if this dialect as well as the dialect of Cape York could sometime be thoroughly examined*).

We know nothing certain about the earlier wanderings of the Eskimo before they came to Greenland. We know nothing about how long they have been in America, or whence they have come thither. When Dr. H. Rink, mostly through linguistic, ethnographical and geographical considerations, came to the result that they have moved from the interior of America along the rivers toward the coasts, expelled by the Indians**), I cannot see that he had any conclusive proof for his theory. Such probabilities, which are based upon resemblances and differences between the various tribes, are not in themselves of equal weight with historical evidence, as long as no certain criteria can be found for the direction and the dating of the migrations. What has been shown is a relationship between the various Eskimo tribes which points back to original unity; nothing, however, indicates the point of departure or the direction of the wanderings. If they have moved from west to east, or from south to north, or in some other way, is not decided***). We do not know if the ancestors of the Eskimo

*) All the East Greenlanders living to the south of Angmagssalik are said to have wandered over recently to the west coast with the intention of settling there for good, so that now Angmagssalik is the only inhabited place on the east coast. Cf. G. Meldorf: Fra en Vaccinationsrejse i Egnen omkring Cap Farvel 1900 in Meddelelser om Grönland Vol. XXV, 1902.

**) Rink considered it highly probable that the transition from inland dwellers to coast dwellers had taken place in Alaska. "Eskimo Tribes" (Meddelelser om Grönland Vol. XI, 1887) pp. 4 ff. Supplement (Medd. om Grönl. 1891) pp. 19 ff.

***) Dr. F. Boas has recently proposed that the original home of the Eskimo is to be sought east of the Mackenzie River (the coasts of Hudson Bay). The Eskimo of Baffin Land and Hudson Bay, Bulletin Amer. Mus. Natur. Hist. Vol. XV, 1901, pp. 369 ff.

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have followed the rivers or the coasts, if they were the original inhabitants of America or if they have come to America later than the Indians.

The Eskimo language by itself, so far as it is hitherto known, constitutes an independent family of languages. No one has as yet succeeded in finding any language either in Asia or among the American Indians which might possibly have been originally related to it*). We find it spoken between such widely separated points as the east coast of Greenland and the Asiatic side of Bering Strait. The Eskimo live only along the coasts, seldom (as in Alaska) a little ways in toward the interior of the land. Between the two boundary points mentioned, there exists a difference of dialect about equivalent to the difference between two related languages (like English and German). The transitions from dialect to dialect seem to take place on the whole steadily and gradually in the intervening districts; but it has not yet been possible to undertake a direct comparison between tribes which are more widely separated than that they can visit each other**).

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*) Lucien Adam: En quoi la langue esquimaude diffère-t-elle grammaticalement des autres langues de l'Amérique du Nord? Congr. Internat. Amér. Compte-Rendu, Copenhague 1884, pp. 337, 353. — H. Rink: Om Eskimoernes Herkomst, Aarböger f. nord. Oldkyndighed, 1871, pp. 286 ff.

**) As compensation for this, we have the cases where missionaries from Greenland or Labrador have had an opportunity to communicate with more distant Eskimo. The most interesting of these cases is that of J. A. Miertsching, who in the capacity of interpreter accompanied Mac Clure's expedition aboard the "Investigator" in 1850—54, after having spent five years as a missionary in Labrador. So he spoke the language of the Labrador Eskimo. The expedition, as is well known, passed through Bering Strait to the North American archipelago. After having spent three winters there, they deserted the ship. Miertsching's papers were unfortunately lost on this occasion, but after his return home, he wrote a diary after memory (Reise Tagebuch. Gnadau 1856). According to what he here tells us, he spoke with the Eskimo (*Kogarmiut*) already a little east of Point Barrow (Long. 153° 47'); all that he writes about their language is this: "Die Verschiedenheit des Dialektes hinderte nicht, das wir uns recht gut verstehen konnten" (p. 27). About the Eskimo at Cape Bathurst

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On the whole, all information about the language outside of those places which have been visited by the missionaries is very incomplete and must be employed with the greatest care.

If I think, notwithstanding, that I have been able to get some certain results out of comparisons between Greenlandic words and those specimens of the language spoken on the northernmost coasts of the American continent which missionaries and arctic explorers have written down, then it is because, aside from those accidents of orthography which are due to misunderstanding or inaccuracy, I find that the specimens show certain consistent deviations which are without doubt peculiar to certain parts of these coasts and characteristic of the dialects there. The partial agreement of orthography in the specimens of the different explorers with respect to these deviations indicates that all the explorers have heard them. Moreover since it seems very uncertain whether these dialects, being so difficult of access, will ever be subjected to competent treatment by specialists in linguistics who will be willing to make the long journey necessary for investigating them at firsthand, we must be content for the present to make the best of the material at hand.

(127°) he writes: "wenn mir ihre Ausdrücke unbekannt waren, halfen sie sich durch Zeichensprache ... Die Sprache dieser Leute weicht etwas ab von der anderen Eskimos an dieser Küste. Sie verstanden mich sehr gut, mir hingegen wurde es im Anfang schwer Alles zu verstehen". Also among the Eskimo on the coast of Prince Albert's Land (72° N. lat. 118° W. long.) mutual comprehension seems to have been brought about without difficulty. These Eskimo live one and a half times as far from Labrador as the inhabitants of Upernavik are from Cape Farewell on the coast of Greenland. That Miertsching was able, partially at least, to understand the distant Eskimo and they him, distinctly indicates that there must be great homogeneousness both in the structure of the language and in the single sounds of the language all the way from Labrador to Point Barrow. Unfortunately Miertsching says nothing about the nature of those differences of pronounciation which often caused the difficulty in understanding.

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So far as I can see, it seems as if the Eskimo dialectal peculiarities are, from a geographical point of view, irregularly grouped (as is the case in the other languages): some are very wide-spread, others exist only within narrow limits; some extend over connected territory, others appear in two different places which are separated from each other. Each group must have originated in the course of time as divisions took place in the tribe and these tribal divisions became isolated from each other. The more two dialect-groups resemble each other, the shorter must be the time that has passed since their separation took place. By means of this criterion, it is possible to reach some decision with regard to the historical relations between the tribal groups; and in so far as it seems probable that some of these groups are linguistically at an earlier stage of development than others, it will perhaps also be possible to decide about the relative length of time which has passed since their separation from the primary horde. This criterion, however, can give us no clue as to which group has dwelt longest in the district in which it is found at present, and as to which groups have been the last to wander into the districts where they are now. The linguistic data alone cannot be used to prove anything with regard to the history of the migrations.

As we have seen, however, in the beginning of this investigation, there is some historical probability for the assumption that the Eskimo of Greenland (at all events on the west coast) have taken possession of their present territory later than the other East Eskimo groups; and certain peculiarities in the language of the Greenlanders, when compared with the West Eskimo dialects, indicate that they have reached on the whole a more advanced stage of linguistic development than the western and central Eskimo. This is probably not accidental; here I am content, however, merely to state the fact. — With regard to those linguistic-historical results which I think I have been able to show at least some probability for, I shall not

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anticipate here, but refer to the latter sections of this work, which are concerned with the Eskimo dialects.

Accordingly, in order to reach decisive results regarding the earlier history of the Eskimo race, we must have far more extensive investigations; through the language alone we can expect no results. When we consider how difficult it has been to reach any decision about the distant past of the Indo-European race by means of comparative investigations, and how many different theories there are about the situation of the original home of this people and about their wanderings, it is scarcely surprising that no one has as yet succeeded in laying down the lines for the first migrations of the Eskimo hordes out from a common point of departure. Yet it does not seem improbable that by means of archæological investigations and a continued study of its traditions and language, we shall sooner reach the desired results for this unmixed and strongly marked coast-people than for a people whose history presents more complexity.

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III.

Bibliographical Survey. — The Intellectual Culture of the Greenlanders.

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1. Survey of the literature about the Eskimo language, historically arranged, with some notes and quotations in connection with the works mentioned.

I only mention such works as have had or can have independent value for linguistic research, while mere abstracts or compilations are not taken into consideration. Those who desire a complete list I can refer to:

J. C. Pilling: Bibliography of the Eskimo Language, Washington 1887, which includes all Eskimo dialects, and

P. Lauridsen: Bibliographia Groenlandica in "Meddelelser om Grönland" Vol. 13, 1890, which only includes works about the Greenlandic language (pp. 199—217).

a. Accounts of Travelers and Geographical Works containing collections of Eskimo words or specimen texts.

1. Martin Frobisher: First voyage 1576. The language of the people of Meta incognita (Hakluyt's Voyages, London 1810, Vol. 3, p. 56).

   17 Eskimo words with translations (from Baffins Land).
   "This people I judge to be a kind of Tartar, or rather a kind of Samoed" (p. 126).

2. John Davis: Second voyage 1586 (Hakluyt's Voyages, Vol. 3, p. 140).

   40 Eskimo words with translations (from Greenland).
   „They pronounce their language very hollow and deepe in the throat."

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About the language farther north he says:

„They differ not from the other, neither in their Canoas nor apparel, yet is their pronuntiation more plaine than the others, and nothing hollow in the throat."

3. A. Olearius: Vermehrte Newe Beschreibung der Muscowitischen und Persischen Reyse. Schleswig 1656. Lib. III, Cap. 4. Von den Grünländern.

113 Eskimo words with translations.

When David Dannell's expedition returned in 1654, they brought with them 4 Greenlanders from Baals Revier (Godthaab Fjord), a man *Ihiob*, a woman *Kuneling* and two children *Kabelau* and *Sigoko*. They were sent to King Frederik III, who, because of the pest in Denmark, was staying in Flensborg in Schleswig. The Greenlandic words given were written down here by an army-surgeon Reinhold Horrn from Pomerania, who had taken part in Dannell's expedition and had been appointed to take charge of the Greenlanders. Olearius himself later got an opportunity to observe them when they came to live in his house.

"Ihre Sprache und Auszrede fält auff die Tartarische art; Sie reden und schnattern geschwinde und machen die Wörter meist im Palatu, oder oben im Hulse, welche sie cum rasione quadam oder halb schnarrend hervor bringen, sonderlich wenn das (g) mit unterlaufft, als Kagsua etc. Ihre Sprache ist sonderlich, und mit keiner Europischen gemein" (p. 170).

4. Thomas Bartholin: Acta medica et philosophica. Hafniae 1673. p. 70: De Groenlandorum Unicornu et Lingva.

About 400 Greenlandic words with translations. These were written down by Thomas Bartholin's brother Caspar who had them from the previously mentioned Greenlanders from Dannell's expedition, whose names are given in the following forms: *Juppaa, Gunneling, Cablau, Siogo*. Here, as in the previous lists of words, there are many words that are correctly translated, but also many that have been misunderstood.

5. A. Dobbs: An Account of the Countries adjoining to Hudson's Bay. London 1744.

About 150 Eskimo words together with some sentences (pp. 203—205), perhaps from the northwest coast of Hudson Bay.

6. Joh. Anderson: Nachrichten von Island, Grönland und der Strasze Davis. Hamburg 1746.

Pp. 285—328 contain collections of Greenlandic words and examples of sentences and inflected forms.

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7. P. Kalm: En Resa til Norra America. Stockholm 1753—61. German translation 1754. English translation 1770.

25 Eskimo words with translations (Vol. 3, p. 451), perhaps from the Labrador Language, communicated by the missionary, Pater Pie J. S.

8. Bryant: Table to show the Affinity between the Languages spoken at Oonalashka and Norton Sound, and those of the Greenlanders and Eskimaux. — Cook and King: Voyage to the Pacific Ocean. London 1784, Vol. 3, pp. 552—553.

Here, among other things, some words from Norton Bay (Alaska) and Oonalaska.

9. J. Ross: A voyage of discovery etc., for the purpose of exploring Baffin's Bay. London 1819.

A List of Eskimo words pp. 122—123.

10. W. E. Parry: Journal of a Second Voyage for the Discovery of a North-west Passage ... performed in the years 1821—22—23 in His Majesty's Ships Fury and Hecla. London 1824.

Pp. 551—571, Specimens of the Eskimo language and lists of words from the south coast of Baffins Land, Melville Peninsula, Iglulik.

11. F. W. Beechey: Narrative of a Voyage to the Pacific and Beering's Strait ..... in the years 1825—26—27—28. London 1831.

Vol. II, pp. 366—383, original lists of words from Alaska, especially from Kotzebue Sound.

12. W. H. Gilder: Schwatka's Search etc. London and New York 1881.

Inuit Philology pp. 299—316 (Hudson Bay and Cumberland Sound).

13. P. H. Ray: Report of the International Polar Expedition to Point Barrow. Washington 1885.

Vocabulary of 711 words and 307 phrases from Pt. Barrow and Cape Smythe.

14. R. F. Stupart: The Eskimo of Stupart Bay (Labrador). Canadian Institute Proc. 3rd Series. Vol. IV. Toronto 1886.

15. A. Woldt: Capt. Jacobsen's Reiser til Nordamerikas Nordvestkyst 1881—83 (Norwegian translation from the German by J. Utheim). Kristiania 1887.

Specimens of the Language of Alaska pp. 327—329.

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16. Franz Boas: The Central Eskimo. — 6th Ann. Rep. Bur. Ethnol. Smithson. Inst. Washington 1888.

Passim Eskimo words from Baffins Land; in the end of the book (pp. 648 ff.), also texts of songs, together with a list of words pp. 659—666.

17. John Murdoch: Ethnological Results of the Point Barrow Expedition, Alaska 1881—83. — 9th Ann. Rep. Bur. Ethnol. Smithson. Inst. Washington 1892.

18. John Murdoch: Notes on counting and measuring among the Eskimo of Point Barrow. The Amer. Anthropologist 1890.

19. G. Holm: Den östgrönlandske Expedition 1883—85, Vol. 2 (Text). Köbenhavn 1888.

Passim Eskimo words and names from the east coast of Greenland. List of names pp. 183—200. List of words pp. 218—234. Texts of drum songs etc. pp. 333 ff.

20. H. Rink: The Eskimo tribes, their distribution and characteristics, especially in regard to language. With a comparative vocabulary. Vol. I—II (Supplement). — Meddelelser om Grönl. Vol. 11, 1887—91.

Angakoq-words pp. 96—97 (vol. II). Text with interlinear translation pp. 102—106.

21. L. M. Turner: Ethnology of the Ungava District, Hudson Bay Territory, ed. by J. Murdoch. — 11th Ann. Rep. Bur. Ethnol. Smithson. Instit. Washington 1894.

22. E. W. Nelson: The Eskimo about Bering Strait. — 18th Ann. Rep. Bur. Amer. Ethnol. Washington 1899.

Eskimo text with translation from Alaska (St. Michael) pp. 475—479.

23. A. L. Kroeber: The Eskimo of Smith Sound. — Bull. Amer. Mus. Natur. Hist. Vol. 12. New York 1899.

Passim words from Smith Sound. Appendix about the Angakoq language pp. 322—327.

24. F. Boas: The Eskimo of Baffin Land and Hudson Bay. — Bull. Amer. Mus. Natur. Hist. Vol. 15. New York 1901.

Texts with translation pp. 333—354.

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25. R. Stein: Geographische Nomenklatur bei den Eskimos des Smith-Sundes. — Petermanns Mitteilungen, 48. Band, 1902, pp. 195—201.

An introduction with remarks on the pronunciation.

26. R. Stein: Eskimo Music. — The white world. Life and adventures within the arctic circle portrayed by famous living explorers. New York 1902, pp. 333—356.

b. Dictionaries and First Translations.

27. Paul Egede: Et grönlandsk Dictionnair. Christianshaab 1739.

Manuscript in the University Library in Copenhagen. Add. 435, 4°.

28. H. Egede: Elementa Fidei Christianae, in quibus in Grönlandorum Vernacula proponuntur. Hafniae 1742.

Luther's Catechism and other things in Greenlandic.

29. Paul Egede: Evangelium okausek tussarnersok. Kjöbenhavnme 1744.

The four gospels in Greenlandic.

30. Paul Egede: Dictionarium Grönlandico-Danico-Latinum. Hafniae 1750.

Paul Egede's dictionary and grammar (cf. below) has been of the greatest importance for all subsequent investigation of the Greenlandic language. When he was 13 years old, he came with his father to Greenland (1721). He was in Greenland twice, and spent 14 years there in all, during which time he acquired the language of the natives to perfection. He often lived with them for months at the time *in sordidis et squalore obsitis Barbarorum tentoriis* (Preface to Lectori Benevolo, p. 5). — *Sufficit mihi glaciem in hoc tam difficili argumento primum fregisse et aliis viam monstrasse* (ib. p. 7).

31. Otho Fabricius: Den grönlandske Ordbog forbedret og forøget. Köbenhavn 1804.

32. John Washington: Eskimaux and English Vocabulary, published by order of the lords commissioners of the admiralty for the use of the Arctic Expedition in Search of Sir John Franklin. London 1850.

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33. Friedrich Erdmann: Eskimoisches Wörterbuch, gesammelt von den Missionaren in Labrador. Budissin 1864.

34. Samuel Kleinschmidt: Den Grönlandske Ordbog omarbejdet, edited by H. F. Jörgensen. København 1871.
Reliable and almost complete in lexical respects.

35. Stephan N. Buynitzky: English-Aleutian Dictionary, published by the Alaska Commercial Company. San Francisco 1871.

36. E. Petitot: Vocabulaire Français-Esquimau, Dialecte des Tchiglit des bouches du Mackenzie et de l'Anderson, précédé d'une monographie de cette tribu et de notes grammaticales. Paris 1876.
Petitot was for a number of years a missionary among the Tinné Indians, who live south of the Eskimo, and he has also published a large dictionary of their language. He finds absolutely no resemblance between the languages of the two neighboring peoples. He has included in his Eskimo dictionary a number of words from the Agutit-Eskimos by Churchill River (the west coast of Hudson Bay), which his colleague R. P. Gasté, missionary at Caribou Lake, has collected. Some linguistic remarks by Egede are quoted in the introduction.

37. R. Wells and John W. Kelly: English-Eskimo and Eskimo-English Vocabularies. Bureau of Education. Washington 1890.

38. J. Kjer and Chr. Rasmussen: Dansk-grönlandsk Ordbog samt Supplement til Kleinschmidts grönlandske Ordbog. Kjøbenhavn 1893.
In the Greenlandic-Danish supplement, which has been prepared by Chr. Rasmussen, special attention is paid to the difference between North Greenlandic and South Greenlandic. A list of the Danish proper names which have been adopted in West Greenland is given pp. 707—709.

39. Zachary Belkoff: Prayers and Hymns in the Yukon-Kuskokwim Language. New York 1896.

40. Francis Barnum: Vocabulary [of the Eskimo language of the Western coast of Alaska]. — Grammatical Fundamentals of the Innuit Language. Boston and London 1901 (pp. 319—376).

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c. Grammars and Text-books etc. by authors who have learned the language that they describe by hearing it.

41. Paul Egede: Grammatica Grönlandica Danico-Latina. Havniæ 1760.

Egede's view of the grammatical structure of the Greenlandic language has on the whole been the basis of all subsequent descriptions of the East Eskimo language.

"*Omnes enim novae lingvae cuidam antiquae originem debent, mutatisque stirpibus mutatur lingva, mixtione ex novis et antiquis vocabulis facta etc. Antiquae lingvae e contrario primam plerumque retinent compositionem etc. Huic innixi fundamento lingvam Grönlandicam esse pervetustam, credere deberemus, accuratas enim in plurimis Grammaticae regulas habet etc. — Ceterum, hanc lingvam Europaeis aut Asiaticis debere originem, haud credo*" (Egede's *Prefatio*).

42. David Cranz: Historie von Groenland enthaltend die Beschreibung des Landes und der Einwohner etc. insbesondere die Geschichte der dortigen Mission der Evangelischen Brüder zu Neu-Herrnhut und Lichtenfels. Barby und Leipzig 1765. — Zweyte Auflage 1770.

Vol. 1, pp. 277—291, remarks on the grammatical construction of the Greenlandic language, with examples etc.

43. E. Thorhallesen: Schema Verbi Grönlandici exeuntes in rpok, pok purum, vok et ok. Sine et cum suffixis agentium et patientium. Havniae 1776.

Tabulated survey of all the verbal inflectional endings.

44. Otho Fabricius: Forsøg til en forbedret Grönlandsk Grammatica. København 1791. — Second Ed. 1801.

Egede's grammar on a more extensive plan.

45. (C. J. O. Steenberg?) Grönlandsk Grammatik. I. Nominernes Flexion i Henseende til Numeros og Suffixa. II. Verbernes Flexion med og uden Suffixa. Kbhvn. 1849.

46. Ivan Veniaminoff: Langues de l'Amérique Russe. — Nouvelles Annales des Voyages, 5^{me} série, vol. 1, 1850 (vol. 125 of the collection).

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Here a short summary of the results of the author's investigation of the westernmost, partly Eskimo, languages (Unalaska, Kadiak, Aleuts, Koloshian), which he has described in detail in Russian in five works published in the years 1840—1846 (printed in St. Petersburg).

"La Grammaire aléoute de Véniaminov est une des meilleures monographies qu'il m'ait été donné d'étudier" (V. Henry, 1879, cf. below).

47. Samuel Kleinschmidt: Grammatik der grönländischen sprache mit theilweisem einschluss des Labradordialects. Berlin 1851.

In the preface, the author states that his object is to free the Greenlandic grammar *"von den autorität des lateinischen als alleinigen sprachmusters .... und sollte daher der wesentlichste unterschied zwischen jenen früheren grammatiken und der gegenwärtigen darin bestehen, dass der ausgangspunkt, statt bei jenen europäisch, bei dieser grönländisch ist."*

This is a very elaborate work and is characterized both by the author's grammatical acuteness and his delicate appreciation of the idiosyncracies of the language. It contains a great deal of new information, partly new points of view, and many good, instructive examples with appended translations. The style is rather heavy, often philosophical, no doubt influenced by contemporary German philology. — The new orthography introduced by Kleinschmidt, which has been adopted in the Greenlandic literature, will be discussed in another place. Portrait and some information about him is to be found in "Meddelelser om Grönland" Vol. 8, p. 87.

48. C. E. Janssen: Elementarbog i Eskimoernes Sprog til Brug for Europæerne ved Colonierne i Grönland. Kbhvn. 1862.

49. W. H. Dall: On some peculiarities of the Eskimo Dialect. — Proc. Amer. Assoc. for the Advancement of Science. Vol. 19, 1871, pp. 332 ff.

Occasioned by the visit of two Eskimos from Repulse Bay in Washington in 1869—70; they were brought home by Capt. Hall.

50. E. Petitot: Vocabulaire Français-Esquimau, dialecte des Tchiglit etc. (as above), précédé ... de notes grammaticales. Paris 1876.

Cf. no. 36.

51. H. Rink: The Eskimo language, its admirable organisation as to the construction and flexion of words. Forms

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Section II of "The Eskimo Tribes". Medd. om Grönland Vol. 11, 1887.

Dr. Rink was first a colonial manager and later the colonial inspector in South Greenland in the years 1853—1858.

52. Chr. Rasmussen: Grönlandsk Sproglære. Kbhvn. 1888.

I have got much help from this very practical handbook of the inflectional and derivative suffixes in Greenlandic.

53. Th. Bourquin: Grammatik der Eskimo-Sprache, wie sie im Bereich der Missions-Niederlassungen der Brüdergemeinde an der Labradorküste gesprochen wird. London and Gnadau 1891.

Clear and full of interesting matter.

54. Aug. Schultze: Grammar and Vocabulary of the Eskimo Language of North Western Alaska. Kuskoquim District. Bethlehem, Pa. 1891.

55. P. H. Sörensen: 100 Timer i Grönlandsk. Köbenhavn 1900.

A Greenlandic-Danish "parleur", accompanied by "Nögle til 100 Timer i Grönlandsk" (Key to 100 Lessons in Greenlandic). Copenhagen 1900.

56. Francis Barnum: Grammatical Fundamentals of the Innuit Language as spoken by the Eskimo of the Western coast of Alaska. Boston & London 1901.

Reviewed in the Danish Geografisk Tidsskrift Vol. 16, 1901—1902, pp. 186 ff.

57. W. Thalbitzer: Studiet af et primitivt sprog. — Förhandlingar vid sjätte nordiska filologmötet i Uppsala 1902. Uppsala 1903 (pp. 50—62).

d. Comparative or descriptive treatments of the language by scholars who have probably not heard it themselves*).

58. M. Wöldike: Betænkning om det Grönlandske Sprogs Oprindelse og Uliighed med andre Sprog. — Det Kiöbenhavnske Selskabs Skrifter 1745, 2. Deel, pp. 129—156.

*) With the exception of Dr. Rink, who was familiar with the West Greenlandic language.

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Conclusion: Greenlandic and Hungarian both originated in the same part of the world, "*which I believe to have been the great Tartarie*" (p. 151). Wôldike was professor in theology at the University of Copenhagen.

59. J. Abel: Schediasma hocce etymologico-philologicum prodromum Americano Grönlandicum in Frontegerens, Mæcenatibus, Patronis et Fautoribus appropriatum insinuat. Havniae 1783.

"*Ut Americanorum stirps, qvemadmodum in superioribus vidimus, Hunnica; ita & Grönlandorum*" (p. 22).

Abel, juris consultus & glottophilus. Irenoburgi 1783.

60. B. S. Barton: New Views of the Origin of the Tribes and Nations of America. Philadelphia 1798.

61. Rasmus Rask: Om det grönlandske sprog. — B. U. H. (Bibliotheca Universitatis Hafniae) Add. 617ᵉ. 4°.

A little manuscript without any signature which lies together with a number of Rask's papers and whose handwriting, orthography and contents all evince that it was written by Rask between the years 1804 and 1818.

"*With respect to the language itself, it does not seem to have any relationship with the European languages, but seems to be most nearly allied to the language in the northernmost part of America.*"

62. Adelung and Vater: Mithridates oder allgemeine Sprachenkunde etc. Berlin 1806—17.

Grammatical comments on the Eskimo language Vol. 3, pp. 425—454. Vol. 4, p. 248—255.

63. H. Steinthal: Charakteristik der hauptsächlichsten Typen des Sprachbaues. Berlin 1860 (pp. 202—231).

64. A. F. Pott: Unterschied eines transitiven und intransitiven nominativs. — A. Kuhn's Beiträge zur vergleich. Sprachforschung Vol. 7, 1873.

The author had before him a manuscript: Grönländische Grammatik 1830 by Valentin Müller "*which is not exactly characterized by scientific insight.*" Kleinschmidt's grammar is also cited.

65. V. Henry: Esquisse d'une grammaire de la langue Innok. Paris 1878.

Founded on Petitot's vocabulary and grammar.

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66. V. Henry: Esquisse d'une grammaire raisonnée de la langue Aléoute. Paris 1879.
Founded on Veniaminov's Aleutian grammar (1846).

67. Fr. Müller: Grundriss der Sprachwissenschaft. Wien 1877—1882. Vol. 2 (1882): Die Sprache der Innuit (Eskimo) (pp. 162—180).

68. Lucien Adam: En quoi la langue esquimaude diffère-t-elle grammaticalement des autres langues de l'Amérique du Nord? — Congrès International des Américanistes, Compte-Rendu, 5th session (pp. 337—355). Copenhague 1884.
Conclusion: the Eskimo language is not polysynthetic, but derivative almost to an extreme, wherein it differs both from the American languages and from the Ural-Altaic languages. It constitutes an "*irreductible famille*".

69. H. Rink: Les dialectes de la langue esquimaude. — Compte-rendu du Congr. Int. des Américanistes (pp. 328—337). Copenhague 1884.

70. H. Rink: The Eskimo Dialects as serving to determine the Relationship between the Eskimo Tribes. — Anthropol. Inst. of Great Britain and Ireland Vol. 15, pp. 239—245. London 1885.

71. H. Rink: Om de eskimoiske Dialekter, som Bidrag til Bedömmelsen af Spörgsmaalet om Eskimoernes Herkomst og Vandringer. — Aarböger for nordisk Oldkyndighed og Historie. Köbenhavn 1885 (pp. 219—260).

72. A. Pfizmaier: Die Sprache der Aleuten und Fuchsinseln. — Sitzungsberichte der k. k. Akademie der Wissenschaften, philosophische-historische Classe, Vol. 105—106. Wien 1884.

73. A. Pfizmaier: Die Abarten der grönländischen Sprache. — Ibidem Vol. 107. Wien 1884.

74. A. Pfizmaier: Kennzeichnungen des kalâlekischen Sprachstammes. — Ibidem Vol. 108. Wien 1885.

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75. A. Pfizmaier: Darlegungen grönländischer Verbalformen. Ibidem Vol. 109. Wien 1885.

76. H. Rink: Den östgrönlandske Dialekt (1887). — Meddelelser om Grönl. Vol. 10, Köbhvn. 1888 (pp. 208—234).

Based on an interleaved copy of Kleinschmidt's dictionary, which the Danish expedition to the east coast (1883—85) had taken along and where the native interpreters of the expedition had noted down some East Greenlandic deviations from the forms of the dictionary.

77. A. F. Chamberlain: The Eskimo Race and Language. — Proceedings of the Canadian Institute. Toronto 1889.

78. J. Byrne: General Principles of the Structure of Language Vol. I—II. Second ed. London 1892.

Among the grammatical sketches of Vol. I, there is one about the Eskimo language (pp. 136—145).

79. Fr. Misteli: Charakteristik der hauptsächlichsten Typen des Sprachbaues. Neubearbeitung des Werkes von Prof. H. Steinthal. Berlin 1893.

I. Einverleibenden Sprachen. 1. Der mexikanische Typus. 2. Der grönländische Typus (pp. 135—154).

80. W. J. Hoffman: The graphic art of the Eskimos. Washington 1897 (also in Report of the U. S. Nat. Mus. 1895).

Cf. Techmer: Internationales Zeitschrift Vol. 1 (Eskimo-pictographs).

The Eskimo language is more incidentally discussed in treatises and works by R. Rask, Es. Tegnér, G. v. d. Gabelentz, Whitney, Techmer, O. Jespersen and others.

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2. The Intellectual Culture of the Greenlanders.

The Eskimo language is only spoken by about 33000 individuals*), so thus it is not because it is wide-spread that it is worth studying, but because like a rare plant, it testifies to a peculiar process of development and affords new material for scientific comparison. Not only does the language itself, by virtue of its content and its construction, contain evidence of a peculiar intellectual life, but it is also the bearer of a primitive civilization.

The Greenlanders' traditions, which consist both of tales and of songs, had been only orally handed down until the middle of the last century, for the art of writing was completely unknown to this race before the coming of the Europeans. In 1859, Dr. Rink sent appeals for the old Greenlandic tales to be collected. He found to his surprise that at all the settlements in the land there were large numbers of them preserved.

They were now written down by the native school-teachers and sent to him, and in the course of a few years, he received over 400, many of which fill several printed pages. How intact these traditions have been handed down was in many cases strikingly proved by the fact that the same tale was told in exactly the same way, almost word for word, in different districts which time out of mind can have had no connection with each other. Many of the traditions have later proved to be common to both the Eskimo in Greenland and in America.

Most of the travelers' accounts from all the Eskimo districts make mention of the strange drum-dances with accompanying songs. It is very difficult to get these songs written down

*) According to Rink: The Eskimo Tribes (1887) pp. 32—34, the number of Eskimo outside of Greenland may be estimated at 21400. According to "Meddelelser fra Directoratet for den Kgl. grönlandske Handel", the Greenlanders numbered 11118 at the end of the year 1900. At Smith Sound there are about 250 (Stein). The population in Greenland is slowly increasing.

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and therefore there have until of recent years existed but scattered specimens of them. It was not before I had crossed the Nugsuaq Peninsula that I came to places where this autochthonic poetry still led a miserable existence, half in concealment, because it is disliked by the missionaries. Round about the curves of the *Oommannaq* Fjord I met with men and women in all the settlements who still very distinctly remembered both the words, the refrains and the tunes of the old songs. Indeed in some places they still knew how to beat the drum (a piece of gut stretched over a wooden ring) according to all the rules of the art; in *Oommannätsiaq*, I saw a ring of singers hand in hand circling round the drummer who stood in the middle, making wry faces and distorting his body. Of course I did not rest before I had written down an ample supply of these songs, and now they are printed and thus preserved for literature. They are just as primitive as the tales, and what art there is expended on them is applied more to their delivery than to their language; only the minority of them contain any approach to rhyme or rhythmical regularity. Their antiquity is testified to not only by their whole character but also by various archaic forms. The Eskimo knew of no other poetry half a century ago; it is original poetry, dating from the race's stone-age, which in this way has been rescued from oblivion.

H. Rink: Eskimoiske Eventyr og Sagn. Kbh. 1866 (Songs pp. 349—350). — Supplement. 1871 (Songs pp. 138—149). — Tales and traditions of the Eskimo, with a sketch of their habits, religion, language etc. Edinburgh and London 1875. — G. Holm: Ethnologisk Skizze af Angmagsalikerne. Medd. om Gr. Vol. 10. Kbh. 1888 (Songs pp. 329—334). — H. Rink: Bemærkninger til G. Holms Samling (ibid. pp. 335—445). — C. Kruuse: Angmagsalikerne (Geografisk Tidsskrift, Kbh. 1902). — W. Thalbitzer: Eskimoisk Digtekunst (Tilskueren 1903).

Specimens of Eskimo folklore outside of Greenland are found in the works (mentioned in the linguistic bibliographical survey) of Boas, Stein, Turner, Petitot, Nelson, Barnum etc.

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Nowhere else have the Eskimo so long been under the influence of more advanced civilization and nowhere else have they progressed so far in enlightenment as in Danish Greenland. They would never have attained to this result by their own efforts alone, for they live too isolated and too scattered. If a great many of the Greenlanders now-a-days are able both to read and write their own language, and if their knowledge and their ideas about life and the world approximate our own, it is first and foremost due to the civilizing work of the missionaries. This work was begun by Hans Egede and his son Paul in the first half of the 18th century. The former, a poor Norwegian clergyman, succeeded in waking in Norway and Denmark in the year 1721 a proselytic and mercantile interest for Greenland and its inhabitants. This interest gained ground especially because it was hoped that there might be found some remains of the old Norse colonies in Greenland, about which there had been no accounts for about three centuries. Hans Egede managed to get to Greenland, and the natural conditions for communication with Europe brought about that the scene of his activity was laid in South Greenland in the district around Godthaab Fjord. The colony of Godthaab has ever since maintained its prerogative as the chief centre for the spreading of foreign civilization in Greenland.

At present, there are 12 Danish colonies up there, beside many small trading-places. At the colonies there are colonial managers and clergymen, shops and churches. Both at the colonies and at the small trading-places, there are native school-teachers, who besides taking charge of the instruction of the children, act as assistants to the Danish clergymen; they read the opening and closing prayers, play the organ etc. These so-called „kateket"s (in Greenlandic in the singular *ajoqe*) are trained at the seminaries in Godthaab and Jakobshavn, where they have to go through a course lasting from 4 to 5 years. Of foreign languages, they learn only Danish, which most of

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them come to understand and speak pretty well. Some of them get so far as to be able to preach a Danish sermon. But they have not much use for this language, for all the instruction in the schools is conducted in Greenlandic. The Greenlanders seem to find great difficulty in learning to talk correct Danish; in all North Greenland, I only met with three or four of them who could speak it tolerably well.

At the Danish colonies, there are special school-houses. At the Eskimo settlements, the children come to the teacher in his private hut; the teacher here is generally an old seal-hunter, who likes to make a little extra income by teaching. Boys and girls go to school together, every day or every other day, with the usual vacations. They are taught reading, writing and arithmetic. Their handwriting is good, but they find great difficulty in learning to spell correctly according to Kleinschmidt's orthography, and likewise in learning arithmetic. They have Greenlandic text-books (*Atuainiutit* Vol. I—II), in which they are given the fundamental elements of geography, natural history, and the history of the world, besides biblical literature and the catechism — in short about the same information about the earth and its inhabitants as is imparted in the schools of the civilized world. — In their homes, they learn from those about them the Eskimo domestic customs and mode of living; the boys, for instance, learn to paddle a kajak and to use firearms and harpoons. Here they also become acquainted with the many traditions which have been handed down from heathen times and which we call superstitions. The tales are full of them. It is especially at the isolated settlements, where Europeans seldom come, that these national traditions still flourish and find room in the minds of the people along side of the ideas of Christianity. In these places — and they are the majority — the Danish Greenlanders still live in a strange confusion of posthumous heathendom and primitive Christianity.

The literature which is printed in the native language

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is issued partly by printing-houses in Copenhagen, Haderslev, Stolpen, Bautzen etc., partly by the printing-house which was established at Godthaab (*Nook*) in South Greenland in 1861 and which is managed by a Greenlander. The nature of this literature testifies more to the perseverance of the Danish missionaries in grafting European enlightenment and ways of thinking on this primitive population than to any powers of literary production among the poor seal-hunters and fishermen themselves. Yet it is worth noticing that the Greenlanders like to write letters to each other, and that the most intelligent and enlightened of them often send articles to the Greenlandic "Illustrated News".

This publication bears the name *Atuagagdliutit* "something that is prepared to be read"; it is an illustrated monthly magazine which was started in 1861 by the printing-house in the colony of Godthaab; it is edited by a Greenlander and continues to appear every year. In it is to be found a good deal of information about the ethnography and folklore of the Greenlanders.

A collection of Greenlandic tales in the original language, with illustrations drawn by a Greenlander, has also been published by the printing-house in Greenland under the title *Kaladlit Okalluktualliait* (Vol. 1—4, 1859—1863).

The translations of the bible published under Danish auspices are:

P. Egede: *Evangelium okausek tussarnersok* (The four gospels) 1744. 2nd Ed. 1758. — Ib. *Testamente nutak* (The new testament) 1766. — O. Fabricius (The new testament) 1799. — O. Fabricius and N. G. Wolff (The new testament) 1827. — P. Kragh (Parts of the old testament) 1829. 1832. 1836.

Samuel Kleinschmidt and H. F. Jörgensen: *Tastamantitâĸ* (The new testament) 1893. *Tastamantitoĸaĸ* (The old testament) 1900.

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S. Kleinschmidt has edited a geography (1858), a history of the world (1859), a church history (1873) and several other books in the Greenlandic language.

The new Greenlandic hymn-book contains 455 hymns and has the following title: *Kristumiut Tugsiautit erinagdlit erinaĸángitsutdlo. ilángússartagdlit.* (Kbh. 1885.)

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PHONETIC INVESTIGATION

OF THE NORTH GREENLANDIC LANGUAGE.

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All the Eskimo words, and they only, are printed in italics.

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v f Danish v and f (somewhat more loosely articulated than in English) occur occasionally

s point and blade *s* (*ts*, *rs*) } unvoiced
ç front *s*, aspirated }
h (rare)

ʊ ɤ
o cf. Frenc closed
o uvularizec
ɔ uvularizec
ɔ̈ } advanced
ō }

· one dot over a advanced
·· two dots over advanced (ï

ˌ slight degree of nasalization: *q̣ ę*
˜ strong degree of nasalization: *r̃ g̃ ã ɔ̃*
· quantity: *a·* long, *a.* half long, *a··* very long, *a* sh
ˈ stress: ˈ*a* relatively strong stress, ˌ*a* relatively we stress, *a* weak stress
˥ pitch: *a̗* low pitch, *a̖* medium pitch, *a̋* high pitch
ˀ glottal stop
[ ] enclose the phonetically transcribed words; less tions are given without brackets.

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breadth, however, "is not found in the teeth-rim, whose arch is comparatively narrow and compressed, determined, as it is, by the form of the palate, which is craniometrically expressed by the breadth-index of the palate-arch. This index, which, however, is known only from craniums, is low in the Greenlander. He is what is technically termed leptostaphyline, and when the breadth of the lower jaw is so great, it is exclusively due to a strong development of its hindmost part, to which the largest and strongest muscles are attached".

What is here stated about the West Greenlanders will undoubtedly be found to apply to the Eskimo race everywhere. If we may be permitted to draw conclusions as to the organs of articulation from their linguistic functions, the extensive use which the Eskimo makes of uvular ("guttural") sounds might lead us to assume that his inmost organs of articulation, especially the uvula and soft palate, are unusually strong. —

The task which I am to undertake in the following pages is a description of the sound-elements of the Greenlandic language together with the most essential positions of articulation for each sound. The basis for this account will be the phonetic lists already mentioned in the introduction. The meanings as well as the grammatical forms of the examples cited will for the present be left out of consideration.

Speech-sounds are produced when the air which is expelled from the lungs meets a certain resistance on its way through the mouth and is thereby brought into vibration. This may be caused first by a tightening of the vocal chords, then farther out by a narrowing of the mouth-passage, which may variously be brought about by action of the soft palate, the tongue, or the lips. The order in which the organs of speech come into action is accordingly this: lungs, vocal chords, soft palate, tongue, lips.

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§ 2. The pure almost unimpeded breath is found but seldom as an independent speech-sound in Greenlandic. It is heard in laughter, in certain emphatic exclamations, and as an imitation of the auk's cry (cf. section on decoy-sounds). In the *Upernawik* District, I heard it in the interjection *ah·a·*, which elsewhere in Greenland has the form *aρ·a·*.

A stronger or milder degree of aspiration occurs, however, as a modifying element in connection with some of the consonants. The unvoiced fricatives [*ρ χ λ φ*] are produced by means of a vigorous exertion of the lungs and the diaphragm so that the expiration becomes audible. In the case of the stopped consonants (tenues), the matter is more complicated. Before the vowels [a o ɔ], the consonants *k t p* sound, as a rule, like the corresponding French tenues, that is, they have as little aspiration as possible. Before [i e u], on the other hand, these sounds are oftenest strongly aspirated. In [*kaρ·a a'ṭ·ȧ·'ṭ pa·*][1-3], their sound is about the same as in French cas, tas, pas, but they contain an h-element in [*ki^{w}φ·aq kɪ·wa· tikeq ip·ik*][4-7]. In the first words, these sounds may be designated as voiceless g d b, in the last words, as k^{h} t^{h} p^{h}.

Aspirated final consonants I have often heard in [*ȧ·k^{h}*][8] and in other words ending in the same syllable, e. g. in a childish vocative form [*anana·k·^{h}*] (Niarq.) instead of *ana·naŋa*, my mother! Weak final aspiration is sometimes to be heard in [*a·p a·p^{h}*], yes.

The activity of the lungs in the production of word-stress and the rhythm of the language, will be considered in another section.

§ 3. The open glottis positions (ɛ2 and ɛ3, cf. O. Jespersen, Fonetik § 253) are frequent in Greenlandic. The

[1] promontory [2] recent [3] the mouth of a river or a fjord [4] a servant [5] it bit him [6] theforefinger [7] a cliff [8] an exclamation used when one hands a person something.

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widest open position may be supposed to occur at the formation of the aspirated consonants just mentioned, always in the case of the first four [$\rho\ \chi\ \lambda\ \varphi$], and often in the case of the aspirated tenues [$q\ k\ t\ p$].

Since all of these sounds are common in Greenlandic, and since they are frequently long, the language is characterized by a continual succession af voiced sounds and voiceless pauses. In the case of $q\ k\ t\ p$ these pauses are absolute; in the case of the voiceless fricatives the soft whistling of the aspiration indicates audibly that the organs of speech are in activity and that expiration is not taking place without impediment.

The next widest opening of the glottis probably takes place frequently at the formation of the slightly aspirated tenues and also as a transition between a voiced and a following aspirated sound, as for instance between the vowel and the aspirated sound in words like [aρ·a· $i\lambda$·o $i\varphi$·it]. It corresponds to the h-sound, which, as remarked, is of rare occurrence in Greenlandic, and also to the light vowel-aspiration with which the interjection [a··h] and similar expressions of emotion may terminate.

The smallest possible opening of the glottis (ɛ 1) is the one which is used in the formation of the voiced sounds; we shall return to this subject in § 4.

The complete collapse of the vocal chords with closure of the glottis — (Sweet: the glottal stop, the Danish "stød", the ɛ 0 of Jespersen; indicated by an apostrophe before or after the vowel) — occurs once in a while in Greenlandic, though only occasionally. I once heard a mother say [$'ä$·· $'ä$·] to her little child when it wanted to eat something that was too dirty. [na$'$ $'a$··h] is an ordinary exclamation of pain when one hits or burns oneself. Likewise [$ajüs$·$üse$·$'a$]*) (Arq.), how terrible it is! (scil. the cold).

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*) From *ajus·use·* (i. e. its terribleness) + *a*, an interjection.

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§ 4. The voiced sounds in Greenlandic are: (1) the vowels, (2) the nasalized consonants, (3) the short fricatives [*r ɣ l w*]. — Voiced mediæ (g, d, b) do not occur.

There seems to be most vocal force in combinations of sounds like [*rn, rŋ*] etc. Of the voiced consonants, the nasals [*m n ŋ*], especially when long, are more strongly and decidedly voiced than the others [*l r ɣ w*], which become unvoiced when they are lengthened, as in the words:

pulaw'oq[1]	*p'uɬ·at*[2]
niɣ'aq[3]	*n'iχ·at*[4]
uni'arpa·[5]	*un'eρ·aq*[6]
iw'ik[7]	*'iφ·it*[8]

But even when short, these fricatives may sometimes be unvoiced in words where they generally are voiced, as in:

sule[9] *ila*[10] *iluanik*[11] *a·rit*[12] etc.

Unvoiced vowels (whispered vowels) I heard quite often, especially as finals, and especially among old people. I frequently heard [*k'sj'än·'e*] with a whispered [*k's*] instead of [*kisi'än·'e*][13].

On the whole, the Greenlanders speak with a clear strong voice, and, as far as the men are concerned, with a deep chest voice.

The contrast between the voiceless and the most strongly voiced sounds is very distinctly heard.

§ 5. The soft palate with the uvula is of notable significance for the production of sounds in the Eskimo language.

In the first place, the soft palate is used, as in other languages, for nasalizing, and it is frequently in use for this

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[1] he (she, it) slips in [2] a trap [3] a snare [4] do. in the plural [5] he drags it along the ground [6] track of a trailed aquatic animal [7] grass [8] do. in the plural [9] yet [10] yes, of course! [11] its interior (instrumental) [12] now you can see! [13] but.

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purpose both in connection with consonants and vowels. The nasalizing activity is not only constant in the formation of certain sounds (*n m ŋ ŋ*), but is apt to spread to adjacent sounds. *rn* becomes *r̃n*; *arn* even becomes *ãr̃n*; likewise *rm* and *rŋ* become *r̃m* and *r̃ŋ*, with constant nasalizing of the preceding vowel. In the case of many individuals, this tendency to nasalize is due to a mild degree of snuffling.

I found that this physiological peculiarity was very common everywhere. In certain districts, it is undoubtedly of linguistic importance because it causes nasalizing of sounds which in other districts are not nasalized, for instance, of *r* in the *O·m·an·aq* and *Upernawik* districts, of *g* everywhere in North-Greenland, occasionally of *t*, which thereby passes into *n*, and of *w*, which thereby passes into *m* (e. g. *iwna* > *imna*[1].

There is one word which is produced without any other articulation than voice-position + nasal resonance. Whereas "yes" elsewhere is expressed by *a·p*, in the *Upernawik* dialect this word is often replaced by a simple nasal sound [*ŋ·*] or [*m·*], uttered with falling intonation, a word of the utmost phonetic simplicity*).

Within the limits of the constant sounds of the Greenlandic sound-system, it is remarkable to observe that, whereas long unvoiced and short voiced consonants often occur with mouth-resonance, there are no long voiced consonants with mouth-resonance. In other words, only those voiced consonants which occur with nasal resonance [*m n ŋ ŋ*] may be long. Therefore

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*) I may yet add that the word for "no" — *na·χa* — is often accompanied by a grimace, a wrinkling of the nose, which either has no signification or merely intensifies the negation, for it does not necessarily indicate any displeasure. Very often too the word is accompanied by shaking of the head. Likewise the already mentioned interjection ['*ä·*] and another interjection [*ä·r*], both of them expressions of disgust, are uttered with open, slightly vibrating lips, and are accompanied by shaking of the head and wrinkling of the nose.

[1] he over yonder.

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when a long consonant in a word has originated from two short ones, of which one was a voiced sound and none was nasalized, the long one has either become voiced and nasalized (*a·p-qɔ·q* > *a.ᵐη·ɔ·q*, yes is said) or unvoiced and aspirated (*iwλ·it-lo* > *iwλ·iλ·o*, and you; cf. *unalo*, and he).

§ 6. Here already at the rear entrance to the mouth-passage is the place where the first group of Greenlandic consonants are produced. The Greenlander forms some of the most typical sounds of his language by means of the soft palate, the uvula and the root of the tongue, the same organs which produce the unpleasant sounds of snoring and hawking. When these inmost parts of the mouth meet and are firmly pressed against each other, the root of the tongue being shoved back and up, there is formed the articulation closure for that peculiar uvular tenuis (explosive) which again and again occurs in the language, and which in ordinary Greenlandic literature is indicated by a special letter: ĸ, in phonetical works by the sign: *q* (analph. $\gamma 0^{k1}$).

All the inner part of the mouth-passage is drawn back and up toward the back of the fauces, whereby the space in that part of the mouth seems to become larger. When the root of the tongue is shoved back for the closure, the whole tongue is thereby drawn back, and its upper surface, with the exception of the very point, is apt to become concave or shovel-formed with the middle part lowered. When the stop is broken by the force of the outgoing air, there is heard a short, creaking or rattling sound, which seems to proceed from as great a depth in the mouth-passage as a consonant-sound ever can come. It seems to be entirely destitute of sonority, and is most like the noise made by two stones that are suddenly scraped against each other. As soon as the outgoing air has broken its way, the muscles are relaxed and the soft palate, the uvula, and the

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tongue all return to their natural positions. Examples are:

[qaq·aq] [1] [qoqa·q] [2] [qa··] [3] [qeqertaq] [4] [qerq·uaq] [5] [quaraq] [6] [a·q] [7] [qaqɔrpɔq] [8] [qiseq] [9] [qipɔq·aq] [10] [qaqeq·aq·a·rpɔq] [11].

The fricative which corresponds to *q* is [*r*], analph. $\gamma 2^{k\,or\,l}$ or $\gamma\zeta$ i. e. an untrilled r. I observed no uvular trill*). The sound must not be confused with the ordinary point-r (the English r) with which it has nothing in common. It has more resemblance to the French and German back-r (analph. $\gamma 2^{j}$) when untrilled, and especially to the Danish r ($\gamma 2^{k,l}$)**), because it is produced by friction just as far back in the mouth, right by the back of the fauces. The point of the tongue rests passive behind the lower teeth. Still the Greenlandic r is different from the Danish r in that its articulation is tenser, more energetic, the sound accordingly more consonantal, and generally more protracted. It is worth noticing that whereas the uvular r found in Indo-European languages is a reduced point-r, the Greenlandic r has never been articulated at the point of the tongue, but seems rather to be a reduced *q*. This origin also explains why the sound lacks the uvular trill. Besides it must be remarked that the Greenlandic r is variable in tenseness of articulation. It seems to be tensest when it is followed by *q* and prepares as it were the convulsively firm closure of this sound. Examples are:

[erqa·] [12] [a·rqât] [13] [sarqaq] [14] [arqarλune] [15] [arqiλ·oηo] [16]

rq is probably nothing but a modified form of long [*q*·].

*) With the single exception of [eʀsiŋa·tcŋut] (ʀ = trilled r), which I find among my notes from the Egedesminde district.

**) Jespersen, Fonetik § 319 and 214.

[1] a mountain [2] the shadow which the land casts on the water [3] the surface [4] an island [5] seaweed [6] a bunch of flowers [7] a sleeve [8] is white [9] spit [10] a kind of whale [11] it (the ptarmigan) is screeching [12] its neighborhood [13] gloves [14] the sunny side [15] descending [16] mending it.

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There is, on the whole, firm and forcible articulation whenever the r precedes a consonant, as in:

[*sarφaq*][1] [*qarsaq*][2] [*arsarnɛrit*][3] [*arsaq*][4] [*qarsɔrsaq*][5] [ar*φa·*][6] [*nerλeq*][7].

But when the *r* stands alone between vowels without being lengthened, a case that is less common, the friction seems to be lighter: [*mamara·ra*][8] [*neriwɔq*][9]; in the interjection [a·*rit*][10] there is often an unvoiced, mildly aspirated *r* to be heard.

As a rule r (and *r*) appears to be voiced, most decidedly before *q*, but also before aspirated consonants when the r is preceded by a long vowel, as in: [*qa·rpɔq*][11] [a·r*λuk*][12]. After a short vowel, the voicing quickly disappears.

Long *r* between vowels is always unvoiced, has strong friction and is modified by strong aspiration, which is probably accompanied by an uvular trill (inaudible). The aspiration is especially forcible at the last moment, before voice begins with the following vowel and the glottis is tightened. The transition from aspiration to voice takes place suddenly and rapidly.

I shall designate the aspirated *r*, like the other aspirated consonants, by a Greek letter [*ρ*]. Examples are:

[*maρ·aq*][13] [*naρ·oŋa·*][14] [e*ρ·ɔρλoŋo*][15] [*qäρ·öt*][16]

The point of the tongue remains passive at the formation of this sound as at the formation of the short *r*.

[*ρ·*] is in the Upernavik district replaced by [*q·*] or [r*q*], as in:

[*marqaq*][17] for [*maρ·aq*]
[ar*qɾsumik*][18] for [a*ρ·ɾtumik*] etc.

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[1] stream, current [2] loon (a bird) [3] aurora borealis [4] a ball [5] fish-hook [6] the outer edge of the hand [7] a goose [8] I like it (scil. the food) [9] he is eating [10] now you can see! [11] it is bursting [12] *delphinus orca* [13] clay [14] he despises him [15] to wash it [16] a talus [17] clayey soil [18] slowly.

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In [erqɔrλoηo], then, two different words coincide in the Upernavik dialect; it means both: "to hit the mark" (in shooting) and "to wash it"; the latter has the form [eρ·ɔrλoηo] in the neighboring dialect to the south.

Nasalization, constant or occasional, frequently sets in in combination with these positions of the soft palate, except in the case of *ρ*.

When two or more *r*-sounds meet around intervening vowels, the whole sound-group may easily be modified by a mild degree of nasalization so that it gets to sound snuffled, as in:

[*more·rsit*] [1] [*nɛrere·rame*] [2]

This nasalization seems to be merely a consequence of the power of inertia. When the *r*-friction takes place loosely and feebly, the back of the tongue fails to shove the soft palate all the way up against the rear of the pharynx and close the nose-passage.

The positions of articulation of the *q*- and *r*-sounds are in reality closely related to the open position of the soft palate which produces nasalization, a fact which is also apparent from the analphabetical symbols for the positions: $q = \gamma 0^k$, $r = \gamma 2^k$, nasalization = $\delta 2^k$ or 3^k, where k indicates the corresponding points of contact or approximation on the soft palate and on the back of the tongue.

It is therefore worth noticing that whereas consonant combinations otherwise are pretty rare in Greenlandic, yet the r-sound frequently stands before a nasal consonant. In these groups, the r becomes nasalized (the last part of the sound at all events), and in fact not only the r, but very often the preceding vowel too, as in:

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[1] a grindstone [2] after he had eaten.

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[ař*nät*] [1]) [*tamařmik*] [2]) [*narsařmiȯt*] [3]) [ĕř*nutaq*] [4]) [*mĕřŋɔrpɔq*] [5]) [ĕř*ŋit*] [6]).

Still this nasalized r often retains the character of a fricative, even if it is more „stopped" than when unnasalized. Its approximation to a stopped consonant is probably due to the fact that the outgoing air on its way to the nose-passage presses the soft palate forward toward the back of the tongue and lessens the opening between the two as much as possible. Now it is likely that at the formation of this sound-combination r + nasal, a gradual meeting of the soft palate, the back of the tongue and the back of the fauces takes place, during which the mouth-passage is kept open only with difficulty. So]řŋ] probably often passes into [ŋ·], the r having become quite closed.

Nasalization can also affect an isolated *r* and that to so great a degree that a complete back-stop takes place, and an entirely new sound is produced: a nasalized and voiced uvular consonant, generated in the same place where *q* and *r* are formed. For this sound I suggest the new symbol [ɳ], which analphabetically correspond to $\gamma 0^{k}$ $\delta 3$ ε 1. This sound I observed, however, only in the two northernmost districts, along the coasts of the *Oommannaq* Fjord, and along the *Upernawik* coast, where it is to be heard in those words which otherwise have a single *r*, as in:

[*qeɳiwɔq*]	for	the	usual	[*qeriwɔq*] [7]
[*neɳiwɔq*]	»	»	»	[*neriwɔq*] [8]
[*mamaɳa·*]	»	»	»	[*mamara·*] [9]
[*anoɳe*]	»	»	»	[*anore*] [10]
[*eɳina·*]	»	»	»	[*erina·*] [11]
[*ak·eɳuserpa·*] (Up.)	»	»	»	[*ak·eruserpa·*] [12]

etc.

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[1] women [2] all [3] inhabitants of the plain [4] grandchild [5] becomes weak [6] lakes, water (plur.) [7] is frozen stiff [8] he is eating [9] he likes it (scil. the food) [10] wind [11] melody [12] raises something by pressing it up from below.

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In all of these cases I presume that the soft palate itself takes active part in the formation of a firm closure with its lower edge against the back of the tongue. The outgoing air can therefore suddenly force its way as if with an explosion, which is the reason why this sound from the acoustic point of view is more apt to remind one of the unnasalized stopped sounds (q k etc.) than nasals do as a rule.

§ 7. I have lingered long at the inmost part of the mouth because the sounds there produced are so very important for the Greenlandic language and for the comprehension of its whole phonetic basis (also for the vowel system). To sum up: there is a nasalized voiced stopped consonant η *), an unvoiced stopped consonant q, a voiced fricative r, and an unvoiced aspirated fricative ρ.

This sound-series may serve as a prototype for all the remaining Greenlandic consonants. There is a striking conformity between these four uvular consonants and all the rest of the consonant-system. In the path of the outgoing air there are still three places where friction or closure takes place: the first is that portion of the palate that corresponds to the back part of the tongue (γ^{j-h}); the second, the place behind the teeth (β^{t-d}) which is the field of activity for the point of the tongue (β); the third is the lips (α). At each of these places, the Greenlander produces sounds both by closure and friction, just as at the inner entrance to the mouth-passage, and these sounds may be modified by the same means which operated there, namely: voice, breath, nasalization.

We may accordingly draw up the following consonant-system for the Greenlandic language as a whole:

*) I consider the nasal sounds to be the most primitive speech-sounds, because at their formation the soft palate rests passive, and I therefore place them first in the system.

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	rear of the mouth (uvula)	back tongue	point tongue	lips	
Stopped Consonants	η	η	n	m	voiced
	q	k	t	p	voiceless
Fricatives	r	g	j l	w	voiced
	ρ	χ	ς λ	φ	voiceless

The Greenlandic language, then, appears to have developed a stock of 18 consonants, which with amazing regularity may be arranged in a fourfold system according to the four fields of articulation. The series of uvular sounds, which is either lacking or very incomplete in the languages of civilization, occurs here just as complete as the other sound-series.

In the following pages, I shall describe the positions and processes of articulation of the above mentioned consonants in the various vowel environments in which they may occur. It is not my intention to treat this subject exhaustively; I cite only some of those cases which I myself have observed.

The key-words are always cited in such an order that those illustrating sounds produced fartherst back in the mouth come first, those illustrating sounds produced farther front, last.

The uvular consonants [η q r ρ] are all articulated at about the same point (γ^{kl}), at the inner threshold of the mouth-chamber, and are always articulated there in whatever vowel-combination they happen to stand.

§ 8. The back consonants [k η g χ].

These sounds are difficult to observe without risking a change in the natural position of the mouth, which has to be held open in order to let the light in. The field of articulation is thereby shoved farther back or down toward the soft palate

than when the same sounds are produced with the usual position of articulation, and consequently we must suppose that those articulations which I thus observed in the wide open mouth are in natural speech formed somewhat farther forward. Still I believe that I am not far wrong in the following back tongue positions, and I may especially emphasize that the relation between them may be considered in all essentials correct.

The Roman numerals (p. 83) indicate the individual Greenlanders whose positions of articulation I have examined (v. p. 8). When no Roman numeral is given, it means that the articulation indicated is representative for the average of a number of single observations noted on my phonetical lists.

k before [*ɪ*] in [*kɪ·sa*][1] and similar words is often, if not always, slightly palatalized or front-modified. A labialized *k* (with rounding of the lips) I found in Upernavik, where the word [*ki^{w}φ·aq*][2] was pronounced [*ki^{w}k^{w}aq*].

ŋ in the combination *rŋ* may doubtless often be attracted all the way to the edge of the soft palate so that the sound becomes identical with the previously discussed [*ŋ*] (p. 79), as in:

[*merŋɔrpɔq*][3] [*erŋerλune*][4] [*erŋɪ·n·aq*][5] [*erŋutaq*][6] [*erŋit*][7] [*nerŋit*][8]

It is strange that all of these words with the exception of *merŋorpoq* are just as often to be heard in other forms with *rn* (*rm*) instead of *rŋ*, e. g.: [*ernerλune*] [*ernɪ·n·aq*] [*ernutaq*] etc. In [*nerŋit*] the *ŋ* has even wandered all the way from the lips, since the original form is [*nermit*]. These double forms of the same words are no doubt used side by side in North Greenland, but *rŋ* (*rŋ*) is said to be especially North Greenlandic, *rn* (also) South Greenlandic.

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[1] finally [2] servant, housemaid [3] becomes weak [4] immediately [5] = [6] [6] grandchild [7] water, seas [8] bonds, bands, strings.

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[k]

[kuk·aq][1] $k^1 = \gamma 0^{j(i)}$ $k^2 = \gamma 0^{j(k)}$ $q = \gamma 0^{k}$

[kujȧk][2] IV $k^1 = \gamma 0^{ij}$ $k^2 = \gamma 0^{j}$ V $\gamma 0^{ji}$ VI $\gamma 0^{j}$ XX $\gamma 0^{ij(j)}$

[kukik][3] $k^1 = \gamma 0^{j(ji?)}$ $k^{2 \text{ or } 3} = \gamma 0^{j}$

[kȧʷk][4] VIII [ka·ᵓwa] $\gamma 0^{ji}$

[ukiⁱɔq][5] $\gamma 0^{ji(i?)}$

[ak·a·][6] $\gamma 0^{ij \text{ or } j}$, V, VI, VIII, IX $\gamma 0^{j}$ XVIII, XIX, XX $\gamma 0^{ij}$

[kȧk·ⁱa·k][7] V $\gamma 0^{ji}$ $k^3 = \gamma 0^{jk}$ XVIII $k^1 = \gamma 0^{j}$ $k^2 = \gamma 0^{j}$ $k^3 = \gamma 0^{jk}$

[kȧk·ik][8] $k^1 = \gamma 0^{ij}$ $k^2 = \gamma 0^{j(h)}$

[ajɔrnakȧʷs·aqaˑɔq][9] $\gamma 0^{ij}$

[ȧk or ȧkh][10] $\gamma 0^{ij}$ XIX [a·kh] $\gamma 0^{j\,i}$

[katȧk][11] $\gamma 0^{ij}$

[ukɛ·wɔq][12] $\gamma 0^{i \text{ or } ih}$

[kiφ·aq or kiʷφ·aq][13] IV [kiʷ-k·ʷaq] $\gamma 0^{hi}$?

[kɛ·wa·][14] $\gamma 0$ or 01^{hi}

[kɛ·sa][15] $\gamma 0$ or 01^{hi}

[ŋ]

[ɔrŋ·it][16] XX $\gamma 0^{kj \text{ (or } k?)}$

[qa·ŋ·erλ·oŋo][17] IX $\gamma 0^{j(ji?)}$ VI, VIII, XIV $\gamma 0^{jk?}$ X, XIX $\gamma 01^{jk?}$

[qaŋa][18] $\gamma 0^{j}$

[aŋak·ɔq][19] $\gamma 0^{j}$

[aŋ·a·][20] $\gamma 0^{ji?}$ VI $\gamma 0^{j}$

[aŋaˑˑ][21] $\gamma 0^{ij}$ IV $\gamma 0^{j}$

[naŋⁱa·wɔq][22] $\gamma 0^{ij?}$

[kⁱȧŋⁱⁱa][23] $\gamma 0^{ij}$

[aŋɐqⁱa·][24] $\gamma 0^{ij?}$

[ᶜʷŋ·ertut][25] $\gamma 0^{ij}$

[kⁱɛŋ·uwɔq or kⁱɛŋuwɔq][26] IV $\gamma 0^{ih}$ VIII, X, XIX, XX $\gamma 0^{ij \text{ (or } i?)}$

[ɣ].

I had frequently heard this sound in conversations with a South Greenlander with whom I associated in Copenhagen before my departure, and since it is also usual in the current Greenlandic orthography and in the available text-books, I of

[1] remains of chewed meat which have become fastened between the teeth [2] the loins, the rump [3] nail (finger or toe) [4] the walrus's hide [5] a year [6] his uncle [7] (exclamation of surprise) [8] snot [9] it is damned difficult [10] please [11] the inner housedoor [12] he is wintering [13] servant [14] it bit him [15] finally [16] the armpits [17] surpassing it [18] when? [19] angakoq, a heathen priest [20] her brother's child [21] uncle (mother's brother) [22] he is in doubt [23] the nearest neighboring part of the inland [24] is it big? [25] songs from the heathen age [26] upsets (intr.).

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course expected to find it in the language, and had prepared a list of key-words containing this sound-symbol. But I had not been long in North Greenland before I began to realize that the sound *g* there leads merely a parasitic existence. It is to be heard occasionally, but in most words where it is expected, the sound *ŋ* is heard instead. I have therefore determined to regard it as an irregular sound, and to use *ŋ* throughout. When my private notes expressly have *g*, however, I retain this symbol.

The words in my *g*-list, then, assume the following forms, where *ŋ* is everywhere substituted for the South Greenlandic *g*:

[qaqoŋo][1] γ0[ji or j] [ajaŋaq][2] γ0[ji]
[po·ŋotaq][3] γ0[ij?] [kiaŋ|up·ɔq][4] γ0[ij or ji]
[asaŋa·ŋa][5] γ0[i or ij] [na·kŋa·][6] γ0[i]
[ŋ|ip·a·][7] γ0[i] [ŋa·][8] XI γ0[i]
[panŋa][9] γ0[ih] [ɪ·ŋa.ɪ][10] γ0[ih or hi]
[ɔrnŋa·][11] XI γ0[hi] [pŋŋŋa][12] XI γ0[h (hg?)]

Other examples are:

[na·laŋaq][13] [asaŋa^{w}k·it][14] [atɔrλoŋo][15] [oq|arφŋ|a·][16]
[nŋ|aq], plur. [n|iχ·|ät][17] [ul|ik·|arλoŋit][18] [q|uλ·oŋi|aq][19]
[aŋi|aq][20].

All of these words are in South Greenland pronounced with the fricative *g* in the place of *ŋ*. Yet there are also plenty of words in South Greenlandic where the sound *ŋ* is used. [asaŋa·ŋa] is in South Greenland pronounced [asaga·ŋa].

Wherever I came in North Greenland I had the same experience. When I asked a Greenlander to repeat the word *na·laqaq* or *iga*, he always answered me with [na·laŋaq] [ŋa·], accordingly with the nasalized stopped consonant in place of the unnasalized

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[1] when (in the future)? [2] a kind of toy (cup and ball) [3] plate [4] he is warm [5] he loving me [6] he pities him [7] he throws it away [8] his pot [9] my daughter [10] the inner wall of a Greenlandic house [11] the one (or the thing) that he went up to [12] I who own it [13] lord, master [14] I love you [15] to use it [16] he says to him [17] bird-gin [18] to fill them [19] worm [20] violin.

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fricative. The same peculiarity repeats itself in my memoranda of tales and songs from all the places which I visited. But still there remains the curious fact that I almost everywhere observed single exceptions to the rule — setting aside the "kateket"s and the half-Danish population — even among the "real" Greenlanders.

Of the key-words on the g-list, X and XX pronounced the word *îgai* [ɛ·gɑ·ɪ] with $\gamma 2^1$ = a back tongue fricative, XI, the words *pigiγiga* and *kiagugpoq* [*pɪgɪɣiga*] [*kiagup·ɔq*] with $\gamma 2$ or at all events a very loose stop, whereas the same individuals in all the other words used exclusively η. And they were even apt to nasalize the fricative γ. But these very few exceptions are the only ones I know of. Otherwise the sound η was used everywhere instead of γ in the key-words on my phonetic lists.

From the rest of my notes, however, I can mention still more examples of words with γ, fewest from the northern districts, but more from Disko Bay, where γ, at all events nasalized, may be said to be right common, and is in some words used interchangeably with η. Farther south (Egedesminde District), η again seemed to predominate. In some cases I found it impossible to decide whether I had heard a [η] or a [$\tilde{\gamma}$] (nasalized), for instance in

[*qumiλ·oγo*] or [*qumiλ·oηo*], [*tiγuwa·*] or [*tɪηuwa·*] etc.

But all these sporadic cases of γ are of little significance as against the wide-spread and prevailing use of η in the same words and by the same individuals. Therefore I think I come nearest the truth when I say that the sound [η], the nasalized stopped consonant, is throughout the whole of North Greenland well on the way to supplant [γ], the corresponding fricative, and indeed in most places already has done so. This sound-change is probably connected with the usual propensity for snuffling. Only the native "kateket"s and those Greenlanders who imitate their language made an effort to pronounce the words "correctly" with γ.

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On account of my own uncertainty in some cases as to whether it was η or a nasalized g that I heard, I think I have reason to suppose that there may still occasionally be a slight difference between the η which is original in a number of words and that η which is a nasalized development of g and which is now gradually establishing itself. Then the difference must be that the original η is formed with a firm closure ($\gamma 0$), the new η, with a looser closure ($\gamma 1$).

That g and not η is the original sound in the words with the $\gamma 1$-form is evident from the plural form of such words as [*niŋaq*], plur. [*niχ·ät*], where χ is merely a long aspirated g, and from the relationship between words like [*ŋa*], a pot, and [*iχ·awik*], a kitchen (the pot-place). Besides most of the dialects outside of Greenland seem to have g in these words just as in South Greenlandic.

Whether the sporadic occurrence of g in North Greenland is due to the fact that this sound has not yet passed entirely into η, or whether it is due to the fact that the "kateket"s, who have studied at the seminary in South Greenland, try to impress on the school children that this is the more correct or finer sound (because the Danish missionaries use it), must remain an open question (cf. § 31 on dialects in Greenland). I have got the impression that the latter circumstance has had some influence in preventing the sound-change from being adopted by all individuals in North Greenland.

[χ].

Greenlandic χ = $\gamma 2^{\text{i or j}}$.

[*uχ·ɔrnaqa·°q*] [1]	$\gamma 2^{\text{j}}$
[*aχ·ertɔq*] [2] [*miäχ·ɔ·rpɔq*] [3]	$\gamma 2^{\text{ji or ij}}$
[*saχ·aq*] [4]	$\gamma 2^{\text{i or ij}}$
[*na·χ·a*] [5]	$\gamma 2^{\text{i}}$

[1] that is vexatious [2] one who is approaching [3] it (the dog) is howling [4] a thin-haired seal-skin [5] no.

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Cf. German*) ch in ich = $\gamma 2^{g \text{ or } gh}$, echt = $\gamma 2^{h}$, ach = $\gamma 2^{i \text{ or } ij}$, Spanish*) j in Juan, Jeres = $\gamma 2^{i}$, Florentine Italian*) c in la casa = $\gamma 2^{i}$

χ is an aspirated consonant that stands in the same relation to g as ρ to r. Its place of articulation, as in the case of the German ch, depends very much upon the surrounding vowel-sounds. Between back vowels, it lies rather farther back in the mouth than the corresponding German sound; between front vowels it may probably be drawn forward to the point: h (the highest point of the palate-arch) as in: [*ni*$^{w}\chi$·*o*][1] [*i*χ·*ia*][2].

In Upernavik, this sound is not used, but is replaced by the corresponding stopped consonant (lengthened). At the same time the preceding vowel is in a strange manner postpalatalized, i. e. the back part of the tongue, as in the case of q, lays itself slowly up against a large portion of the palate (γ^{i-h}) as if to prepare the k-closure. Ex.: [*nä*·*ka*] for [*na*·χ·*a*][3], [*äk*·*erpɔq*] for [*a*χ·*erpɔq*][4], [*säk*·*aq*][5], [*miäk*·ɔ·*rpɔq*][6], [*uk*·ɔ*rnaq*a·^{ɔ}*q*][7] etc.

§ 9. Front consonants [*j s*].

Greenlandic j = $\gamma 2$ or $3^{g\,(gh,\,gf)}$.

Cf. French*): piller $\gamma 2$ hier [j·æ·r] $\gamma 23$ travail, bataille [trava·j, bat$_{\Lambda}$·j] $\gamma 3^{g}$ or 34^{g}.
English*): yard, you $\gamma 23^{g}$ or 3^{g}, Danish*): ja, jubel = English [j].
German*): ja, jugend $\gamma 2^{g}$.

The Greenlandic j-sound may in general be said to be produced by a light friction of the whole front of the tongue against the palate-arch.

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*) Jespersen: Fonetik §§ 211—213.

[1] slime of fish [2] his throat [3] no [4] he approaches [5] a thin-haired skin [6] it is howling (the dog) [7] he is vexed because he failed.

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The sound resembles the English [j] (yard, you) in words like [*aja·*][1], [*ajuaq*][2], [*ajaŋaq*][3], [*kujak*][4], or is drawn a little farther back, as, for instance, in [*qajaq*][5] = $\gamma 3^{x_h}$, [*aqaja·*][6] etc. In other combinations, on the other hand, it is produced farther front in the mouth with that part of the tongue which lies just behind the blade and opposite to the arch-rim (alveolars), as in [*näja·*][7], perhaps also in [*pɛŋajuät*][8], accordingly $\gamma 2^{x_f}$. In several instances, I observed that the point of the tongue was slightly raised toward the lower edge of the upper teeth, and likewise that the back of the tongue was slightly grooved or shovel-formed.

j is generally found only between back vowels. There is an audible difference between [*puják*][9] where *j* = $\gamma 23^{x}$, and [*puiaq* or *puɪaq*][10], where the sound is entirely vocalic ($\gamma 34^{x}$).

Greenlandic [*s ç*] = $\begin{cases} 1)\ \beta 1^{d}\ \ \gamma 1^{fe}\ \text{(or}\ \beta 13^{d}\ \ \gamma 13^{fe}\text{)} \\ 2)\ \beta\ \text{»}\ \ \gamma 1^{fx}\ \text{(or}\ \beta\ \text{»}\ \ \gamma 12^{x}\text{)} \\ 3)\ \beta 13^{e}\ \gamma 23^{f}\ \text{(or}\ \beta 13^{ef}\ \ \gamma 23^{fx}\text{)} \end{cases}$

Cf. French, Icelandic, Færoic*) s = $\beta 1^{ef}$.
Danish, German*) s = $\beta 1^{fe}$, German s c h [š] = $\alpha 5^{a}\ \gamma 12^{f}$.
English*) s = $\beta 1^{f}$, English s h [š] = $\gamma 1^{fx}$

The North Greenlandic *s*-sounds are rather variable and are therefore difficult to determine.

s no. 1 (*ts*): distinct point-sound, the point of the tongue being raised so that it rests just back of the lower edge of the upper teeth; narrow groove, high natural pitch. The sound is always short. It occurs most in the combination *ts*, as in [*nät·seq*][11] (cf. section on *t*-sound p. 92).

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*) Jespersen: Fonetik §§ 192 and 208.

[1] aunt [2] a boil [3] a toy, cup and ball [4] loins [5] kajak [6] the lower part of the abdomen [7] his younger sister [8] the third [9] oxidized blubber [10] a bird's crop [11] ringed seal (*phoca fœtida*).

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s no. 2 [ç]: front of the tongue protruded, the point passive and lowered, the middle of the tongue raised, broad groove, slightly š-like quality, aspirated.

Ex.: [*qá^{w}ç·ɛ·t*] [1] [*çɛ·t* or *ç·ɛ·t*] [2] [*a·çɛt* or *a·ç.i.t*] [3] [*aluç·a·^{w}t*] [4] [*a·^{w}çaq*] [5] [*ça·*] [6].

The [ç] is formed differently from the European *s*- and š-sounds (Eng. sh, French ch, German sch, etc.). The point of the tongue rests passive against the back of the lower teeth, and the middle (and back?) of the tongue is somewhat raised. The groove stretches over a large portion of the surface of the front part of the tongue. The sound is loosely articulated. A chief characteristic of the articulation is the raising of the middle of the tongue; I think the sound can be said to be slightly postpalatalized. This palatalization is, however, not like the Russian one; there is no *j*-element to be heard at the end of the consonant, but the preceding vowel is most often influenced by it: [*ä^{i}ç, ö^{i}ç*]. — The sound has a rather high natural pitch because its place of articulation is so far front. It is, however, very variable both with respect to the palatalization or the š-element and the natural pitch; the š-quality sometimes disappears when the articulation becomes tenser under the influence of adjacent sounds (thus we get *β*^{d}: the point of the tongue raised and stretched toward the lower edge of the upper teeth); and the natural pitch is sometimes lowered when the body of the tongue is drawn back by an adjacent back sound. These variations may in large measure occur indiscriminately in the same words and to a certain degree seem to depend upon the speaker's individual peculiarities.

s no. 3 (*rs*): the blade of the tongue somewhat drawn back, narrow groove, lower natural pitch, similar to the English and

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[1] several, many [2] willow (*salix*) [3] interj. of course! [4] a spoon [5] summer [6] its front.

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Danish s-sound, unvoiced. In the combination *rs*, there is almost always this kind of *s*.

Ex.: [ers·er*p*·ɔ*q*][1] [ars·a*q*][2] [*as*·arn·e*q*][3] [*isern·iarit*][4].

Voiced *s* [*z*] I observed but once in VIII in [*perz*·er*p*·ɔ*q*], otherwise [*pers*·er*p*·ɔ*q*][5].

In the *Upernawik* district, I occasionally heard an *s* which seemed to begin with a momentary closure somewhat like $t\varsigma$ or $^{t}\varsigma$ (where *t* indicates a loosely formed stopped consonant between *t* and *k* produced by the front of the tongue in about the same place where *j* is formed, or perhaps a little farther front). Ex.: [*kà*$^{t}\varsigma$·*orane*][6] [*alu*$^{t}\varsigma$·*a*·^{w}*t*][7].

In South Greenland, it is said that there exists a more distinctly š-like *s* than the loosely formed *s* heard in North Greenland. A North Greenlandic "kateket" (in *Niaqornät*) who had received his training at the Godthaab seminary in South Greenland pronounced it for me, and the position of his tongue seemed most nearly to indicate an inverted (cacuminal) *s*, the point of the tongue being bent up and back*).

The long *s*-sounds seem to have lighter friction and stronger aspiration than the short *s*-sounds.

§ 10. The point sounds [*t n l λ*] are in the majority of cases articulated against the lower edge of the upper teeth (interdentally) or against their back surface.

t n l and the aspirated *λ* all occur in Greenlandic, but

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*) According to a private communication kindly sent me by the present director of Godthaab Seminary, the sound does not resemble the German sch. Those Greenlanders who are not accustomed to use it from childhood never learn to pronounce it perfectly even if they otherwise learn to speak the dialect of that district. This *s* is found all the way from Holstensborg south to Fiskernæsset, occasionally yet at Frederikshaab, but not farther south.

[1] becomes visible [2] a ball [3] land-breeze [4] come in! [5] it (the snow) is drifting [6] soon [7] a spoon.

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there is no voiced *d*, no point-*r*, and no voiced or unvoiced fricative like the English th-sounds [þ ð].

Greenlandic t = $\beta 0^{\text{d or de}}$
» n = $\beta 0^{\text{ed or de}}$

Cf. Icelandic, Færoic, Norwegian, French(?)*) t, n = $\beta 0^{\text{e}}$
German, Danish*) t, n = $\beta 0^{\text{fe}}$, English*) t, n = $\beta 0^{\text{f (or fg)}}$

On my phonetical lists, I find that of 111 observations of the t (or t^s) position, the position $\beta^{\text{d (or de)}}$ occurs 89 times, the position $\beta^{\text{ed or e}}$, 18 times (β^{ef}, 4 times).

Among my 60 n-observations, I have $\beta^{\text{ed or e}}$ 26 times, $\beta^{\text{d or de}}$ 18 times, $\beta^{\text{ef or fe}}$ 16 times.

There appears, then, to be a slight difference between t and n with respect to the place of closure. There seems to be a tendency to articulate n a little higher up behind the teeth than t; t is more nearly interdental than n. Ex.:

[*t*].
[*a·ta·*][1] XVIII $\beta 0^{\text{d}}$ XVII $\beta 0^{\text{de}}$ XIV $\beta 0^{\text{ed (or de)}}$ VIII $\beta 0^{\text{d (de)}}$ I $\beta 0^{\text{d}}$
[*qat·*aq][2] XIX $\beta 0^{\text{de or ed}}$ XVIII $\beta 0^{\text{de or d}}$ XVII $\beta 0^{\text{de}}$ XIV $\beta 0^{\text{d}}$
[*tut·o*][3] $\beta 0^{\text{d, de, ed}}$
[*ta·luta·q*][4] $\beta 0^{\text{d or de}}$
[*ata·ta·*][5] $\beta 0^{\text{d or de}}$
[*qila·ʷt*][6] $\beta 0^{\text{d}}$
[a*ρ·ɾtumik*][7] $\beta 0^{\text{d (de)}}$
[*oqa·ᵗt·ɔq*][8] $\beta 0^{\text{ed (d)}}$
[*na·loŋ·it·ɔq*][9] $\beta 0^{\text{d (de)}}$
[*qˡat·oŋawˡɔq*][10] $\beta 0^{\text{de (d)}}$
[*kˡät·oranˡe*][11] $\beta 0^{\text{d (de)}}$ II [t^s] $\beta 0^{\text{ed}} + 1^{\text{ed}}$
[*pit·a·ʷwɔq*][12] $\beta 0^{\text{d (de)}}$

*) Jespersen: Fonetik § 190, Articulations § 56—57.

[1] his or her grandfather [2] a water-cask [3] a reindeer [4] a shooting-sail [5] his or her father [6] drum; violin [7] slowly [8] a cormorant [9] one who knows something [10] it is calm [11] soon [12] it (or he) is excellent.

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[*it·aq*][1] $\beta 0^{d}$ IV [t^{s}] $\beta 0^{d} + 1^{d}$
[*umi'ät·'a·'t*][2] $\beta 0^{d}$
[*kit·ät*][3] $\beta 0^{d}$
[*nät·ät*][4] $\beta 0^{de}$ XX [t^{s}] $\beta 0 + 1$

[t^{s}] or [*ts*]
[t^{s}*ik'eq*][5] $\beta 0^{de} + 1^{de}$
[t^{s}*ip'a·*][6] $\beta 0^{d} + 1^{d}$
[*nät^{s}'eq*][7] $\beta 0^{d} + 1^{d}$
[*at^{s}'eq*][8] $\beta 0^{d\,(de)} + 1^{d\,(de)}$
[*t'a·t^{s}ɛr'at*][9] $\beta 0^{d} + 1^{d}$
[*qit^{s}erquλ·oηo*][10] $\beta 0^{d} + 1^{d}$ IV $\beta 0^{ed} + 1^{ed}$
[*umiät·^{s}iaq*][11] $\beta 0^{de} + 1^{de}$
[*qaq.arsuä't·^{s}iaq*][12] $\beta 0^{de} + 1^{de}$ XVII $\beta 0^{d} + 1^{d}$
[*at^{s}'erλun'e*][13] $\beta 0^{d} + 1^{d}$
['*at·^{s}'erλoη'o*][14] $\beta 0^{d} + 1^{d}$ VIII [t·] $\beta 0$
[*tät·sit*][15] $\beta 0^{d} + 1^{d}$
[*nät·seq*][16] $\beta 0^{d} + 1^{d}$
[*put·serpɔq*][17] $\beta 0^{d\,(de)} + 1^{de\,(d)}$

The *s*-like element indicated in]t^{s}] may be of very short duration and sometimes very little marked. But it is oftenest quite distinct, and after a long [t·] it is even distinctly separated from this sound, to that we get a normal sound-group consisting of a long t + a short *s*. It has already been remarked that this *s* is different from the usual *s* in that it is articulated in the same place as *t*, with the point of the tongue pressed against the lower edge of the upper teeth.

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[1] many years ago [2] a boat [3] plur. of [*kis'aq*], an anchor, plur. also [*kis'ät*] [4] plur. of [*nas'aq*], a cap, plur. also [*näs'ät*] [5] the forefinger [6] its smell [7] the floor [8] the name [9] the gulls [10] divide something in half [11] a boat, plur. [*umiät·a·t*] [12] a mountain of medium height [13] to go down [14] to give someone a name [15] lakes, plur. of [*tas'eq*] [16] a seal [17] it is foggy.

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In consequence of the peculiar, strongly protruding position of the tongue at the formation of these sounds (*t n l λ*), palatalization often takes place. However, since it is impossible to observe this directly — it is probably to be indicated by $\beta 0^{d}$ $\gamma 0^{f}$ i. e. closure both at the teeth and at the arch-rim — and since it has no appreciable acoustic effect on the consonant-sound (but on the preceding vowel, as we shall see later), I have preferred to leave this palatalization unindicated.

[*n*].

[*nânɔq*] [1]
[*ana·na·*] [2] — $\beta 0^{ed\,(e)}$ — IV, XX [*n*] $\beta^{ef\,(fe)}$
[*tan·eq*] [3]
[arnaq] [4] — IV [*n*] $\beta^{ef\,(fe)}$

[*nan'ik·ât*] [5]
[*an·eq*] [6]
[*pa·n·ât*] [7] — $\beta^{dq\,(d)}$
[*ata·ne*] [8]
[*as·arneq*] [9]
['ars'arnɛr'*it*] [10]

The [*l*]-sounds in Greenlandic are usually bilateral point-tongue sounds, produced

1) with the point of the tongue supported against the lower edge or the back surface of the front teeth, and sometimes against the place: ef;
2) with the point of the tongue bent up toward the arch-rim.

The aspirated *λ* is articulated almost exclusively with the first position i. e. with the point of the tongue supported against the teeth. So the relation between *λ* and *l* is the same as that between *t* and *n*: *λ* is more nearly interdental than *l*.

---

[1] a bear [2] his or her mother [3] the longest [4] a woman [5] the thing that you have found [6] the largest [7] (a kind of) flowers [8] under it [9] land breeze, east wind [10] aurora borealis.

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Greenlandic λ = β l [d or de], rarely β l [e].

Ex.: [ˈaλ·uˈa] [1] [aλ·akˑat] [2] [qȧλ·eq] [3] [ɪλ·o] [4] [aλ·ȧt] [5] [qˈȧλ·unˈaˑq] [6] [iʷλ·it] [7] [kuλ·ɔq] [8] [tăλ·imat] [9] [aˑʷλ·ȧˑʿt] [10] [aŋiwaλ·arqaˑᵊq] [11]

The first part of an λ often seems to be identical with a *t*-closure and makes the same impression on the ear as the beginning of a *t*. In reality the outgoing air makes its way inaudibly along both the edges of the tongue until with strong pressure it beats against the inner surface of the corners of the mouth and rushes out at both sides. The aspiration is strongest and of longest duration in words that have an emphatic meaning, especially when the λ introduces a strongly stressed syllable.

Ex.: [aŋiwˌaλ·ˈaˑrqaˑᵊq] [12] [kiapaλ·ˈaˑrqaˑᵊq] [13] [qȧλ·ˈaˑŋ·aqaˑᵊq] [14]

Greenlandic *l* no. 1 = β l [d or e], as in:
[nˈaˑlaŋˈaq] [15] [qilˈaˑʷt] [16] [alˈɔq] [17] [nulia] [18] [nȧlaˑ] [19].

Greenlandic *l* no. 2 = β l [f (fg)], as in:
[takˈoŋaluˈarpˈakˈˑa] [20] [nˈakˑaralˈutˑuaqˈaˑᵊq] [21] [ˈȧnˑɛrulˈaˑrpɔq] [22] [ɛŋˈerλalˈaˑrpɔq] [23] [oqalupˑalaˑrniarit] [24] [nˌaˑlˈȧŋˑilˈarma] [25]

In some districts, I noticed that this *l* almost assumed the character of an untrilled point-*r* (as in English arab etc.), but with a firmer pressure against the palate, e. g.:

---

[1] a seal's breathing-hole in the ice [2] the written lines, letter [3] the uppermost [4] a house [5] others [6] a European [7] thou [8] thumb [9] five [10] a gun [11] it is too big [12] it is too big [13] it is too warm [14] is indisposed (on account of hunger or cold) [15] lord, master, one who is obeyed [16] drum, violin [17] sole of the foot [18] his wife [19] that which is abreast of, off a place. [20] of course I saw them (but ...) [21] I think it will fall [22] that is a little larger [23] it is progressing a little [24] speak a little as well as you can [25] you do not obey me.

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[ā·p·aʀa·rtɔq] for [ā·p·ala·rtɔq] [1]
[ãŋ·kəʀa·rtut] for [ãŋ·kəla·rtut] or [aŋikala·rtut] [2]
[sɳaʀa·q] (Ik.) for [sɳala·q] [3]
[it·oʀa·rtɔq] (Omnq.) for [it·ola·rtɔq] [4]

§ 11. The lip-consonants [*m p w φ*].

The lips show great repose both in the formation of vowels and consonants. They are seldom much rounded, or pouted, or pressed back against the teeth.

The Greenlandic lip-consonants are all bilabial.

Even when at rest, the lips are frequently to be seen slightly open so that the teeth shine out between them. This seems to be most usual among the unmixed Greenlanders, whose lips are generally thicker than those of the half-breeds.

When the lips are opened or closed by the movement of the lower jaw, it is impossible to see any change in their form, and even when contraction is necessary for the formation of a rounded consonant or some other specially modified lip-consonant, the lip muscles are not very firmly tightened; not even for the sake of emphasizing interjections, is there any appreciable movement in them.

The Greenlandic lip-sounds, then, with the exception of the stopped consonants, may be said to be very loosely formed. Sometimes they appear to be, so to speak, mere approaches to lip-articulations, which in reality are scarcely distinct enough to be called independent sounds. This is especially the case in the sound-combination vowel + *w* + consonant, where the *w*-sound is but seldom able to separate the vowel from the consonant. In order to indicate these lip-positions I place a *u* (*o*, ɔ) or *w* as an exponent after the vowel. The Greenlander

[1] red [2] a (kind of) game [3] a layer of smooth ice formed on top of old ice [4] it is roaring (the water, the fire).

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pronounces them distinctly only when he takes special pains to show how the word ought to be pronounced according to the current orthography. Otherwise this *u* or *w* denotes merely an accompanying movement of the lips or a glide position at the production of the other sounds. Ex.:

[$i^{w}\lambda\cdot it$] [1] [$i^{w}s\cdot\text{ɔ}q$] [2] [$pi^{w}\lambda\cdot uarna$] [3] [$n\ddot{a}^{w}s\cdot a\cdot ra$] [4] [$na\cdot^{u}w\text{ɔ}q$] [5] [$a\cdot^{u}\lambda\cdot\ddot{a}\cdot{}^{\cdot}t$] [6] — [$a^{w}\lambda\cdot a$] [7] [$qa^{w}\lambda\cdot una\cdot q$] [8] or more frequently [$a\lambda\cdot a$, $q\dot{a}\lambda\cdot una\cdot q$].

[m] = $\alpha 0\ \delta 2$
[p] = $\alpha 0\ \delta 0$
[$a\cdot m\cdot a$] [9] $\alpha 0^{b}$ [$m\cdot iaq$] [10] $\alpha 0^{bc\ or\ eb}$ [$o\cdot m\eta a\cdot$] [11] $\alpha 0^{ba\ or\ ab}$
[$a\cdot p$] [12] $\alpha 0^{b}$ [$ap\cdot a$] [13] $\alpha 0^{b}$ [$a\cdot p\cdot a\cdot$] [14] $\alpha 0^{b}$ [$ip\cdot ik$] [15] $\alpha 0^{bc}$
[$up\cdot ik$] [16] $\alpha 0^{ba\ or\ bc}$

[w] = $\alpha 21^{ob}$
Cf. English *f*, Danish *v* = $\alpha 2^{d}$
English *w* = $\alpha 1^{a}$

In the articulation of the Greenlandic *w*, the lips are very slightly rounded (much less so than in the case of the English *w*), with the lower lip somewhat nearer the teeth than the upper lip. No raising of the back of the tongue takes place.

I append the *v*-list in extenso as a specimen showing how my phonetical lists were arranged. Here, as in the other lists, the current (Kleinschmidt's) orthography is retained in the key-words. The only thing I have changed in it is the Roman numerals, in order to make them agree with the new numbers (Roman numerals) which I assigned to my subjects of experiment after my return home (cf. p. 8). But in reality my investigations took

---

[1] thou [2] green turf [3] may you be happy! (congratulations!) [4] that which I have found [5] it is growing out [6] gun [7] another, a stranger [8] a foreigner, European [9] also [10] beer [11] he is vexed with him (or it) [12] yes [13] an auk [14] the other one [15] a cliff, bluff [16] an owl.

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place in the same order in which the analphabetical indications are given here for each single key-word.

v appeared to be almost always bilabial, accordingly more correctly a *w*, but without elevation of the back of the tongue. Now and then I also observed a labiodental *v*.

The *v*-list.

sava[1] XVI $a\,2^{d}$ | XIX | XVIII $a\,2^{c\,(cd)}$ | XVII $a\,2^{ba}$ | V $a\,2^{c}$ XI $a\,2^{c\,(d)}$ | IV $a\,2^{bc}$

avâ[2] XVI $a\,2^{d\,(NB.)}$ | XX $a\,23^{d}$ | XVIII $a\,2^{c\,(cd)}$ | XVII $a\,23^{ab}$ VIII $a\,32^{ab}$ | VI $a\,21^{cd}$ | X $a\,21^{cd}$ | XI $a\,12^{cd\ or\ de}$ IX $a\,1^{b\,(ba)}$ | VII $a\,1^{b}$ | X $a\,1^{b}$ | IV $a\,2$

nâvâ[3] XX $a\,2\,(21)$ | XVIII $a\,2^{c}$ | XVIII $a\,5\,(53)^{ba}$ | VIII $a\,32^{ab}$ V $a\,32^{ab}$ | VII $a\,1^{b}$ | X $a\,1^{b\,(bc)}$ | IV $a\,2$ or $a\,1$

avangnak[4] XIX $a\,12$ | XX $a\,24^{cd}$ | XVII $a\,23$ | VIII $a\,12$ (or 32)^{b} VI $a\,2^{cd}$ | XI $a\,2\,(3)$ or $4\,(3)^{dc}$ | IX $a\,2\,(3)^{b}$ | VII $a\,21^{bc}$ X $a\,21^{cb}$ | IV $a\,2$ | II—I $a\,2^{b}$

avârpâ[5] XVIII $a\,2^{cd}$ | XVII $a\,45^{b}$ | VIII $a\,32$ (or 12)^{ab} | V $a\,2\,(3)^{b}$ XI $a\,12^{cd\,(dc)}$ | IX $a\,23^{bc}$ | IV $a\,2$

savik[6] XIX $a\,12^{ba}$ | XX $a\,12^{cd}$ | XVIII $a\,2^{cd}$ | XVII $a\,2^{cb}\,(24)$ VIII $a\,12^{ab}$ | VI $a\,2\,(1)^{d\,(e)}$ | V $a\,21^{b\,(bc)}$ | XI $a\,2^{c}$ | IV $a\,2^{bc}$ II-I $a\,2^{bc}$, $a\,2^{b}$

arfivik[7] XIX $a\,1$ | XX $a\,1^{d\,(?)}$ | XVIII $a\,2^{dc}$ | XVII $a\,2^{cd\,(dc)}$ | $a\,2^{c}$ VI $a\,2^{d}$ | V $a\,21^{ba}$ | VII $a\,2\,(1)^{c}$ | X $a\,2^{cd}$ | IV $a\,2^{bc\ or\ b}$

inivia[8] XVIII $a\,2^{dc}$ | XVII $a\,2^{cd\,(dc)}$ | V $a\,2^{bc}$

kivíput[9] XIX $a\,12$ | XVIII $a\,2^{cd}$ | XVII $a\,2^{c}$ | VIII $a\,32^{c}$ | V $a\,32^{bc}$ XI $a\,2\,(1)^{bc}$ | VII $a\,2\,(1)^{bc}$ | X $a\,2^{bc}$ | IV $a\,2^{c}$

kivítok[10] XIX $a\,12$ or 24^{d} | XX $a\,2\,(21)^{d}$ | XVIII $a\,2^{(dc)\,cd}$ | XVII $a\,2^{c}$ V $a\,2^{b\,(?)}$ | XI $a\,2^{c}$

[1] a sheep [2] the back part of his or her head [3] he ends it, has ended it [4] north wind [5] he hits him on the back of his head [6] iron, knife [7] whale (balaena mysticetus) [8] its proper place. [9] they became angry or felt offended; retired from the community [10] (participle of the preceding verb).

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kiavoĸ [11] XIX $a1^{ba}$ | XX $a2^{cd}$ | XVIII $a2^{b(cb)}$ | XVII $a35^{a}$ | VIII $a32^{ab}$
VI $a12^{c}$ | V $a23^{a}$ | XI $a32^{b(ba)}$ | IX $a32^{b(ba)}$ | IV $a20^{d}$

ûvoĸ [12] XIX $a1^{a}$ | XVIII $a2^{c(cb)}$ | XVII $a13^{ba}$ | VIII $a32^{a}$
VI $a12^{ba}$ | V $a3^{a}$ | IX $a32^{b}$ | IV $a(2)1^{a}$

nivtâipoĸ [13]

ĸavdlunâĸ [14]

ivdlit [15] V $a2^{c}$

ivssoĸ [16] V $a24^{c}$

ivkik [17]

ivseĸ [18] V $a4^{c}$ | IV $a02$

ivssuvoĸ [19] XX $a2^{d}$ | VI $a21^{cb}$

nauvoĸ [20] XIX $a1$ (or 12)^{ba} | XX $a2^{cd}$ | XVIII $a2(21)^{c}$ | XVII $a3^{ab}$
VIII $a32^{ab}$ | VI $a3^{ba}$ | V $a31$ or 13^{ba} | XI $a12^{c(d)}$
IX $a21^{cd}$ | VII $a1^{c}$ | X $a1^{c}$ | IV $a1^{a}$

auveĸ [21] XIX $a12^{ba}$ (or $a3^{ba}$) | XX $a24^{d}$ | XVIII $a2^{c}$ | $a2^{ba}$
VIII $a23^{b}$ | VI $a2^{dc}$ | V $a2^{b}$ | XI $a2(1)^{c}$ | IX $a2(23)^{b}$
VII $a21^{c(cb)}$ | X $a21^{bc}$ | IV $a2^{c}$

pivdluarna [22]

navsuerpara [23]

navsâra [24]

nangâvoĸ [25] XVIII $a1$ | XVII $a13^{ba\ or\ ab}$ | V $a12^{ab}$ | IV $a2$

igsiavik [26] VIII $a12^{b(bc)}$ | V $a21^{bc}$ | XIX $a21^{dc}$ | $a23^{c}$ | IV $a2$

ivik [27] VIII $a21^{c}$ | VI $a2^{c}$ | V $a21^{c}$ | IV $a20^{cd}$ or 2^{c} | II-I $a20^{c(d)}$

tauva [28] VII $a21^{bc(b)}$ | X $a21^{b}$ | IV $a2$

[11] he is weeping [12] it is cooked; it is burned [13] it is snowing [14] a European, "white man" [15] thou [16] peat [17] the gums [18] juice (in meat) or sap (in plants) [19] is thick [20] it (the plant etc.) is growing out [21] a walrus [22] good luck to you (form of congratulation) [23] I explained it [24] that which I have found [25] is irresolute [26] a seat [27] grass [28] then, thereupon.

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Notes to the key-words of the *v*-list *)

The small numerals (1—28) refer to (the *v* in) the key-words as pronounced by the individuals (I—XX).

XVI [2] avâ: firmer closure than in sava. — XIX *a* 1 or 12, consequently rounding of the lips, indicated as strongly marked: 1, less pronounced: 12. [4] 12 ⬭. [7] 1 -o-. [7] even here in [7], the sound has no resemblance to the English *w*, which is perhaps due to the fact that the lips are very little pouted, but it is decidedly bilabial. [10] the under lips are drawn slightly nearer to the lower teeth. [12] there is nothing of the English *w*, for in the articulation of *v* the lips remain at rest (between *u* and *o*); between the *o*- and *u*-positions there is merely a narrowing, a contraction from a larger to a smaller rounding. [13] without any trace of *v*. [13, 14, 15, 16. 17, 18] without any trace of *v*, but the boy's father Sakarias has in the last ([18]) a slight indication of *v* [ˈiᵛˈsät], but [17] [ˈikˈkēk] (sic !). [19] [ˈivsˈsōvok]. [21] *v* almost = *o*. [22, 23, 24] without *v*. — XX *v* is articulated with the lips separated (-o- *a*4) [is it an individual peculiarity? the open mouth (separated lips) is a very common position of rest in this place (Niakornârsuk)] the under lip is merely tightened and drawn up a little toward the teeth; the upper lip is drawn slightly down. [3] with a little tinge of the English *w*. [2] here, as in the case of several of the other words, a very loose closure between the under lip and the lower teeth and with the lips somewhat rounded (*a* 23). [4] perhaps the best analphabetical indication. NB. here is almost no trace of any resemblance to the English *w*. [19 and 20] about like *o* without rounding of the lips (?). — XVIII ⬭ the closure very loose, which is perhaps the reason why there is some little resemblance to *w*. [11—12] bi-

*) I took down these notes during the experiments themselves in Greenland, and they are here given in the same order in which I wrote them. Between the first and the last there was an interval of more than a year.

labial = ûvak $a2^{ab}$ (probably a little rounding of the lips here). [25] (the next day) with rounding of the lips -o-. — XVII [3, 5] rather *o* than *v*. [11] *o* not like *å*, but like an *o*. [12] very much rounded, a little nearer a^b than *û* and *o*. [20] rounded [21] unrounded. — VIII [13, 14, 15, 16, 17, 18, 19] without any trace of *v*, on the contrary with the under lip lowered (except perhaps in [14] ĸavdlunâĸ). [26] less *w*-like than generally. [27] [*i'vik*]. — VI [*sa'vaĸ*] with *ĸ*. [15] [*ke·va*] with $a2^b$ or 21^b (slightly *w*-like). — V [1] [*savaĸ*]. [2] with outward movement of the under lip here as perhaps in various other cases. [3] as in [2]: it probably means merely: rounding of the lips, projecting and retracting, especially with reference to the upper lip. [7] *f* and *v* the same position of the mouth. [8] quite without or with a very little *w*-tinge. [15] here: *v*, but with the middle of the under lip turned up toward the upper lip, an unnatural pronunciation. [26] [*ivsiavik*]. — XI the positions indicated are undoubtedly exaggerated in the direction of [a]; by comparing (in a mirror) my own lip positions in pronouncing these words with the Danish *v*, I am confirmed in this supposition; thus *avannaĸ a'va·rpara* (repeated again and again) is rather to be indicated by $a2^b$ or perhaps $a2^{bc}$. — VII and X The lips of the former lend themselves better to pouting than the lips of X. — IV [14] without *v* [*ĸädʰluna·ĸ*] [15] [*iᵛdʰlit*] with the lips brought nearer to each other but not closed. [16] [*'i.tsɔĸ*] or [*i·tsɔĸ*] [17] [*ikkɛk*] without *v* [18] [*i.vs·eĸ*] or [*i.ᵛs·eĸ*] distinct *v*-tinge, but no lip-closure. [19] [*it·tsu'voĸ*] without *v*. [2] is pronounced as otherwise the bilabial *v* or [*β*], but it occurs to me here that hitherto I must have used incorrect symbols in all those cases where I have used uneven numbers, since the lips are not generally rounded in the formation of this sound. The corresponding even numbers ought probably to be substituted everywhere in the list. [3] both here and in [2] more than ever before, a

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sound which might resemble the English *w* [*na·°wa·*]. [7] probably bilabial [*arpivik*]. [12] on account of the *u* the lips are very much pouted, therefore uneven numbers; but they are not drawn back quickly as in the case of the English *w*, but are kept forward in rest and are squeezed together to a [*β*] with a little rounding (no closure). [12] without closure against the teeth, but merely friction. [22] without *v*; *una pivdlugo* with a little indication of *v*. — [23] [*nätsu'erpara*] with marked pouting of the lips and a slight wrinkling of the nose at the formation of *tsu*. — [25] [*'itsüaβik*] *tsü* as in [23].

The list contains in all 172 observations of the *v*-sound. The result of these observations is that I found the sound 79 times unrounded (even numbers), 32 times slightly rounded (even + uneven number), 29 times almost rounded (uneven + even number), 32 times absolutely rounded (uneven numbers).

With respect to the place of articulation, my observations show 56 times the underlip slightly drawn back ($\alpha^{c\,(cd,\,cb)}$), 53 times the lips almost or entirely in their natural position ($\alpha^{b\,(bc,\,ba)}$), 17 times the lips pouted ($\alpha^{ab\,(a)}$), 19 times the underlip in contact with the lower edge of the upper teeth ($\alpha^{d\,(dc)}$).

This great number of variations may at first glance seem to show mere confusion and inconsistency. They all have, however, this in common, that they indicate a voiced labial fricative, and on closer observation one soon finds that there is a predominant tendency to form a bilabial slightly rounded fricative. This agrees with the acoustic effect which the sound had on my ears. When I occasionally noted an articulation which very nearly corresponded to our labiodental *v*, I even in that case found that the closure (friction) was as a rule somewhat looser than in the corresponding Danish or English articulation. At all events, the labiodental *v* does occur, but is apparently merely occasional and may perhaps be partly due to the

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influence of adjacent *i*-sounds. Besides I am inclined to believe that it will be observed most frequently and in its purest form among the mixed Danish-Eskimo inhabitants, whose lips are narrower and more flexible than those of the real Eskimo.

[φ] = $\alpha 2^{c\ (cd,\ bc,\ b)}$

Cf. English, Danish *f* = $\alpha 2^{d}$

[sarφaq][1] $\alpha 2^{d\ or\ c}$

[arφeq][2] $\alpha 2^{d,\ c,\ b}$

[arφap·ɔq][3] $\alpha 2^{c}$ or $\alpha 21^{b}$

[arφiwik][4] $\alpha 2^{cd}$

[il,arφà·λ·ät·ˈa·rɒɔq][5] $\alpha 2^{d\ (dc)\ or\ c}$ XIX $\alpha 12^{b}$

[nikˈɔrφawˈɔq][6] $\alpha 2^{cb\ or\ c}$

[a·ᵘlisarφik][7] $\alpha 2^{d\ (dc)\ or\ c}$

[tɾtɔrφik][8] V-VI $\alpha 2^{dc}$ VII $\alpha 21^{b}$ VIII $\alpha 12^{c}$ X $\alpha 21^{b}$ XI $\alpha 2^{bc}$ XIV $\alpha 2^{d}$ XVII $\alpha 13^{ba}$ XVIII $\alpha 21^{b}$ XIX $\alpha 1^{b}$ XX $\alpha 21^{d}$

[oqaluφ·ik][9] $\alpha 2^{dc\ or\ c\ or\ b}$ XIV $\alpha 23^{c}$

[aφ·a][10] V $\alpha 2^{bc}$ XIV $\alpha 2$ or $23^{bc\ or\ c}$ XVII $\alpha 2^{cd}$ XVIII $\alpha 2^{cd}$ XIX $\alpha 1^{ba}$

[sön'a·ᵘφa][11] $\alpha 2^{dc\ or\ c}$ VIII-XIX $\alpha 2^{bc}$ VII-X $\alpha 21^{b}$ (or 12^{b})

[ˈuφ·ˈarparˈa][12] $\alpha 12^{cb\ or\ b}$

[uφ·a][13] V $\alpha 1\ (12)^{ab}$ VI $\alpha 12^{c}$ VII $\alpha 12^{b}$ IX $\alpha 2\ (13)^{ba\ or\ ab}$ X $\alpha 12^{b}$ XI $\alpha 2\ (1)^{c}$ XIV $\alpha 23^{bc}$ XVII $\alpha 21^{ba}$ XX $\alpha 2$

[nuφ·it][14] $\alpha 1^{b\ or\ ba}$

[kiʷφ·aq][15] V $\alpha 2^{c}$ VII $\alpha 2^{bc\ to\ b}$ VIII $\alpha 2^{dc} > ^{c}$ X $\alpha 1^{bc} > ^{b}$ XVII $\alpha 2^{dc}$ XIX $\alpha 1^{bc}$

[siφ·ɾtɔq][16] $\alpha 2^{cd,\ c,\ cb}$

[iφ·it][17] $\alpha 2^{c\ or\ bc}$

[siφ·iaq][18] $\alpha 2^{dc\ or\ c}$

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[1] current [2] whale [3] catches a whale [4] Greenland whale (balaena mysticetus) [5] he is apt to exaggerate [6] stands, is standing [7] fishing place [8] teacup [9] church (speaking-place) [10] there (in the north)! [11] what! [12] I am washing it [13] there! [14] a strap with a cross-stick to hang the fish on that have been caught [15] servant [16] lame in the hip, halting [17] grass [18] a hip.

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Among 179 observations of the *f*-sound in Greenlandic, I found 55 times the bilabially neutral lip-position (a^b), 65 times the under lip bilabially drawn back under the upper lip toward the teeth (a^c), 59 times labiodental friction.

It was scarcely a fourth of them that showed any slight rounding or pouting of the lips, as in the following of the above key-words [8, 8, 12, 13], often also in [1, 2, 9, 10, 11, 14]. As a rule the sound was produced by the air being breathed out through a slit whose form corresponded to the *p*-closure, and there was a predominant tendency to draw the under lip somewhat back toward the teeth as in the case of our *f*. The pure labiodental *f* occurred occasionally, especially 1) between *i*-sounds or after *r* 2) among the mixed Danish-Eskimo inhabitants.

Before *φ*, *i* and *u* often seemed to be velarized, i. e. immediately before (and during) the *φ*-sound, a loose *g* or *χ* friction takes place ($a2^b\ \gamma 3^{i\ or\ j}$). Thus in [12, 14, 16, 17].

The bilabial character of the Greenlandic *f*- and *v*-sounds is also evident from the fact that in the Upernavik dialect, *p*, the bilabial stopped consonant, is consistently substituted for [*φ*]. This fricative does not seem to occur at all in the northernmost districts, where they say *sarpaq* for *sarφaq*[1], *arpāq* for *arφāq*[2], *oqarpɳa·* for *oqarφɳa·*[3] etc.

§ 12. The vowel-system of the North Greenlandic language is on the whole a reflexion of the consonant-system, but it is far from being characterized by the same regularity.

The vowel articulations are, as it were, more fluctuating than the consonant articulations, which is due to the fact that they are in so great a degree subject to influence from the adjacent sounds. An intended *a* or *e*, *o* or *u* has to have its

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[1] current [2] whale [3] he talks to him (tells him).

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place and width of articulation adapted to the surrounding and especially the following consonants; it is drawn forward in the mouth by a following point consonant, pushed in and back by a back consonant. This becomes especially evident on comparing the variations which take place in the final vowel of words with vowel-stems when they enter into combination with various suffixes, and also on comparing the individual and dialectal differences in the pronunciation of the vowels in the same words, as far as it has been possible to observe them.

This often extreme shifting of the resonance conditions of the vowels in Greenlandic is no doubt first of all to be attributed to the dispersedness of the consonant-system, to the large extent of the field of articulation. It is in many cases difficult for the tongue to change position from one consonant to the next, and it is the intervening vowel that is affected by the difficulty.

Vowel articulations are on the whole looser than the corresponding consonant articulations. The consonants are the fixed points in the stream of sound; there is traditionally more energy connected with them than with the vowels. The consonantal sound is a noise which can be produced in only one place of articulation, but in the case of the vowels, a musical tone asserts itself, which blends with the noise of articulation. This musical tone (natural pitch) can be produced about alike in several places in the mouth, while the tongue assumes various positions (cf. a back *a* with a front *a*), but at each new place, the sound will be differently shaded by reason of the changing unharmonious noise-elements, which accompany it. Still there is for any given vowel in a given word a traditional tendency to articulate it in a certain manner, i. e. to raise the surface of tongue toward certain points on the palate. I am inclined to believe that this tendency is more variable in the Greenlandic language than it is as a rule in English and Danish.

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These more or less variable tendencies are all that the phonetician has to depend on when he wants to determine the nature of the vowels. To describe a vowel is merely to describe that position of articulation with which it is usually produced in the language under investigation. The alphabetical symbol of the sound is merely an abstraction or the type of a whole group of shades. In determining these it is generally convenient to take the standard from some language which we know from hearing (as French).

Direct observation of the positions of vowel-articulation by looking at the mouth of another speaker is both difficult and uncertain. I have therefore principally used the indirect method, which is to imitate the sounds myself and to try to keep control of the distances in my mouth and the shape and positions of my tongue by means of the usual methods of self-observation (by observation in a mirror, by whispering and breathing in, by the tongue's feeling of its own movements). The following analphabetical indications and the classification of the sounds include merely the most essential sound-shades, for I have found that it would be impossible to find expressions for all the shades. So the results which I am going to present are rather to be taken as boundary-marks or mile-stones than as mathematically correct expressions for all the vowel sounds of the language.

My experience with vowel-systems has been that every time I have tried to arrange the Greenlandic vowels under the usual heads, they have burst the bounds of the system. Jespersen's method (analphabetical symbols which aim to give an exact quantitative expression of the articulation) is no doubt the only one that can give satisfaction whenever the object is to distinguish fine shades of speech-sounds, but even that is not entirely infallible in the case of the vowels, for its method of valuation is even for experts partly dependent upon individual judgment. Since in the case of the uvular sounds the system

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has no method of indicating the change that takes place in the form of the soft palate (depression, rounding) and accordingly in the resonance-chamber as a whole, I reserve the exponent: ^{k} for designating that a sound is genetically and acoustically affected by such a change (γ^{k}). — For the sake of completeness, I have also tried to classify the vowels according to the English (Bell's) system, although with some modification (v. § 16).

As regards my vowel-symbols, in the beginning of my stay in Greenland, I tried to use the current sound-symbols in my own and in other languages, but I soon found that they could not very well cover all of the Greenlandic vowel-sounds; there is no harmonious relation between the vowel-series of the different languages. I hope that those symbols which I have used will be the easier to read because in form they resemble corresponding or related symbols in other languages. The upright vowel-symbols indicate uvularized Greenlandic vowels. Two dots over a vowel indicate that it is relatively much closed and protruded; one dot over a vowel indicates the same but in less degree; only the vowels *i* and *ï* are excepted. A *u* or *i* in the position of exponent indicates a glide in the direction of that sound (a^{u}, a^{i}). It is only in the words enclosed in brackets, however, that I make strict use of these various diacritics.

§ 13. Survey of the commonest shades of vowel-articulations, which I observed in the North Greenlandic language, arranged according to 1) rounding of the lips 2) distance between the tongue and the palate 3) place of articulation.

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Not rounded vowels

(γ 32 ε, ɛf	[j])	
γ 3 f, fg	[i]	[it·aq] [1] [iʷλ·it] [2] [nimeq] [3] [qila·ʷt] [4]
γ 3 g	[i]	[iʷk·ik] [5]
γ 3 hg	[ĭ]	[ĭλ·o]? usually [iλ·o] [6]
γ 34 fg	[ɪ]	[ɪna·] [7] [pɪn·èrpɔq] [8]
γ 34 h	[ɪ]	[isɪŋa·] [9] [qɪŋ·ua] [10]
γ 35 g, gf	[ɪ·]	[kɪ·wa·] [11] [kɪ·same] [12] [a·sɪ·t] [13]
γ 53 gf	[e·ᶦ]	[pe·ᶦarpa·] [14]
γ 53 g, gh	[e]	[ata·ne] [15] [qànɔŋme] [16] [anore] [17] [eqe] [18]
γ 5 k–i	[ɛ]	[ˈërnɛrˈa] [19] [nɛqˈe? neqˈe] [20]
γ 5 h	[ə]?	[is·əqa·q] [21] [atˢəqarpɔq] [22]
γ 53 k–h	[ë]	[ërneq] [23] [ërnɛra] [24] [qërnèrpɔq] [25]
γ 5 k–i	[è]	[pè·rpɔq] [26] [ɛʷŋ·èrtòt] [27]
γ 5 k–j	[e·]	[pe·rpɔq] [28] [nɛrɛrˈe·ramˈe] [29]
γ 5 k	[e]	[qeqertaq] [30] [qerquaq] [31] [eρ·ök·ät] [32] [qɪm·eq] [33] [atˢˈeq] [34] [tàsˈeq] [35]
γ 7 (76) h	[ä]	[arnät] [36] [nät·ät] [37] [kit·ät] [38] [kisiän·e] [39]
γ 76 i	[à]	[tàsˈeq] [40] [nànˈɔq] [41]
γ 75 i	[à]	[màn·a] [42] [nilˈàk] [43] [miàk·ɔ·rpɔq] [44] (Up.)
γ 7 j, jk	[a]	[ak·a·] [45]
γ 78 or 8 j	[a·]	[a·ta·] [46] [sa·neq] [47] [a·m a] [48]
γ 76 k–h	[ä]	[qäρ·öt] [49] (Uk.)
γ 75 k–i	[à]	[àrnaq] [50]?
γ 7 (79) k	[a]	[qarsa·q] [51] [qaq·aq] [52]

[1] many years ago [2] thou [3] band, string, ribbon [4] violin [5] the gum [6] house [7] its nest, dwelling [8] is pretty [9] he is looking at it [10] the inner end of a fjord [11] it bit him [12] finally, at length [13] (interj.) I told you so! [14] he takes it away [15] beneath it [16] yes, of course [17] wind [18] corner of the mouth, corner of a fjord [19] his son [20] meat [21] it is cold [22] he is named [23] son [24] his son [25] is black [26] has become loose, is lost [27] old-fashioned songs [28] = [26] [29] when he had finished eating [30] island [31] sea-weed [32] clothes that have been washed [33] dog [34] name [35] lake. [36] women [37] caps [38] anchors [39] on the other hand, but [40] lake [41] bear [42] this [43] fresh water ice [44] it is howling (scil. the dog) [45] uncle (father's brother) [46] grandfather [47] bone [48] also, again [49] stones that have slid down, talus [50] woman [51] a loon (bird) [52] mountain.

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Rounded vowels

$\alpha 43^{ba}$	$\gamma 3^{jk,\,j}$	[u]	[uφ·a][1] [puk·ip·ɔq][2] [una][3]
	$\gamma 34^{gh}$	[ü]	[nüjü'it·ɔq][4] [itü'ip·ɔq][5] [süjυa][6]
	$\gamma 4^{hi}$	[ö]	[söna][7] [toɳusön·ip·ɔq][8] [töt·ɔq][9] [eρ·ök·át][10]
$\alpha 54^{ab}$	$\gamma 4^{hg}$	[ö]	[tö·s·öt][11]
$\alpha 54^{ba}$	$\gamma 35^{ih}$	[ö·]	[tö·s·öt][11]
$\alpha 45^{ba}$	$\gamma 35$ or $53^{j,i}$	[υ·]	[kυ·k][12] [υ·tɔq][13] [υ·neq][14] [υ·m·án·aq][15]
$\alpha 45^{b}$.	$\gamma 5^{jk}$	[o]	[anore][16] [sak·o][17]
$\alpha 45^{ba}$	$\gamma 53$ or 5^{k}	[o]	[qo·q][18]
$\alpha 54$ or 56	$\gamma 53^{k-j}$	[ɔ]	[ɔrn·ip·a·][19] [min'itɔrnɛra][20]
$\alpha 76$	$\gamma 76^{k-i}$	[ɔ̄]	[ɔ̄rs·ɔrs·uaq][21] (Arq.)
$\alpha 76$	$\gamma 7^{k}$	[ɔ]	[ɔrs·ɔq][22] [ɔq·ɔq][23]

Remarks

The following analphabetical indications of European vowels, which I quote from O. Jespersen's Fonetik (§§ 336—353) may be useful for comparison:

Not rounded: $\alpha 4^{c}$ $\gamma 3^{gf,\,fg}$ French: fini German: wie Danish: vide. $\gamma 3^{ih}$ Russian [ĭ]. $\alpha 4^{b}$ or 6^{b} $\gamma 4^{g}$ English: bit, mid German: bitte. $\gamma 5^{gh}$ French: été German: See, gehn. $\gamma 6^{gh}$ English: let, bed. $\alpha 8^{b}$ $\gamma 7^{gh}$ French: fête. $\gamma 78^{h}$ English: there, air. — Rounded: $\alpha 35^{ba}$ $\gamma 3^{gf}$ French: pu, lune Danish: yde, ny. $\alpha 3^{ab\text{ or }ba}$ $\gamma 3^{j}$ French: jour, rouge Danish: du, hule. $\alpha 3^{ab}$ (or 35) $\gamma 4^{j}$ English: put, pull German: Mutter. $\alpha 5$ $\gamma 5^{j}$ French: rose, chose German: Sohn, so. $\alpha 5^{b}$ (or 75^{b}) $\gamma 5^{gh}$ French: peu Danish: öde. $\alpha 7^{ba}$ $\gamma 7^{j}$ French: fort, mort. $\alpha 7^{b}$ $\gamma 7^{k}$ English: all.

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[1] there! (pointing at it) [2] it is low [3] he, she, it [4] tame, not shy [5] goes across (from fjord to fjord etc.) [6] its prow [7] what [8] it tastes (or smells) sweet [9] a reindeer [10] clothes that have been washed [11] a kind of big sewing-needle [12] river [13] a seal that has crept up [14] a burn [15] (place-name) [16] wind [17] implement (for hunting or fishing) [18] urine [19] he comes over to him [20] the wake after a kajak (Up.) [21] much blubber [22] blubber [23] the lee side.

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The Greenlandic [e] and [ɛ·] are more closed and protruded than the beginning of an English [e^{i}] in they; likewise Gr. [o] and [ɔ·] as compared with Eng. [o^{u}] in though. — [ɛ] is a short mid-tongue *e*, uvularized. [e·] is an *ä*-like uvular, [ë] an *e*-like uvular, [ė] slightly *ö*-like. [ɔ·] is an *å*-like uvular (*å* = open *o*), [o] *o*-like, [ȯ] very slightly *ö*-like, [ö] slightly *ö*-like (only occasionally found).

§ 14. The Greenlandic vowel-shades can be tabulated in the following manner, there being two chief classes corresponding to the two spheres of resonance in the mouth.

Normal		Uvularized	
i	$\gamma 3^{fg}$		
ɪ	$\gamma 34^{g}$	ë	$\gamma 53^{k-h}$
ɪ·	$\gamma 35^{gf}$	ė	$\gamma 5^{k-i}$
e·	$\gamma 53^{g(gf)}$	e·	$\gamma 5^{k-j}$
e	$\gamma 53^{g(gh)}$	e	$\gamma 5^{k}$
ə	$\gamma 5^{h}$	ɛ	$\gamma 5^{k-i}$
ä	$\gamma 76^{h}$.....	ä	$\gamma 76^{k-h}$
å	$\gamma 76^{i}$		
a	$\gamma 7^{j}$.....	a	$\gamma 7^{k}$
a·	$\gamma 78, 8^{j(jk)}$ ...	a·	$\gamma 9^{k}$
u	$\gamma 3^{j}$.....	o	$\gamma 5^{k}$
ü	$\gamma 34^{gh}$	ȯ	$\gamma 53^{k-j}$
ȯ	$\gamma 4^{h}$.....	ö	$\gamma 76^{k-i}$
ɔ·	$\gamma 35^{i}$.....	ɔ	$\gamma 7^{k}$
o	$\gamma 5^{jk}$	ɔ·	$\gamma 8^{k}$

The uvularized vowels are always followed by one of the uvular consonants (*q*, *ŋ*, *r*, *ρ*); after these consonants no uvularizing takes place; a short vowel before a single *r* is only mildly uvularized, but a long vowel is affected in the usual

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degree; between two *r*-sounds, however, (as in *r*ar) even a short vowel is strongly affected; a vowel preceding *r* + consonant (*rs*, *rt*, etc.) is strongly uvularized, and before *r* + nasal (*rŋ*, *rn*, *rm*) also nasalized. [ė ȧ ȯ] occur only before *rn* and *rŋ*.

The question as to whether these vowels ought to be called uvular or uvularized, depends on whether or not it can be proved that the uvular quality is due to some outside influence (for instance the addition of a suffix beginning with an uvular consonant); in lack of such proof we have to assume the uvularization to have belonged originally to the vowel. In such a word as [*qeqertaq*][1], we know nothing about the origin of the *e*-sounds, therefore they are original in the word in its existing form, accordingly not uvularized, but uvular. The *a*-sound, on the other hand, may be called uvularized, for we see that it owes its uvular quality to the following *q*, since in combination with other suffixes it remains a normal *a*. Ex: [*qeqerta*ᵘ*wɔq*][2] [*qeqerta*·][3] etc. For the sake of convenience, I shall use only the expression "uvularized" in speaking of the vowels, uvular of the consonants.

This juxtaposition of vowel + uvular consonant is very frequent in the Eskimo language, and it always results in the uvularization of the vowel. The two sounds — the vowel + the consonant — in reality make up a phonetic whole. In the formation of the uvularized vowel, that articulation of the soft palate which corresponds to *r* is assumed. If it is a *q* (not *r*) that follows the vowel, the uvular stopped consonant is anticipated in the pronunciation of the vowel by the uvular *r*-friction: [aʳ*q*] or simply written [a·r*q*]. It is clear that these vowels must be produced in a peculiar manner.

In the articulation of *q*, *r*, etc. an enlargement of the innermost part of the mouth-chamber takes place, as has been shown in § 6. The upper part of the soft palate arches upward

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[1] an island [2] it is an island [3] its island.

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while the back of the tongue presses back and up against the lowest part of the soft palate in order to form the slit or the closure which is requisite for these sounds. All the back part of the mouth-passage is thereby brought to act as a new extended resonance-chamber of a peculiar form; since this is in all essentials independent of the movements of the rest of the tongue, a vowel-position and an uvular articulation can very well be concurrent. Different distances between the tongue and the palate will give corresponding kinds of *a*-, *e*-, and *o*-vowels. In determining the resonance-chamber of the vowel, the palate-distance is measured up along the wall of the soft palate from the same point (:^{k}) where the *r*- and *q*-articulation takes place, i. e. the foot of the soft palate (*r* = $\gamma 2^k$, a = $\gamma 7^k$). One might use as illustration here a covered canal-lock where the water can only just spurt in at the very bottom (*r*-friction) while the height of the lock measured from the same point determines the resonance and natural pitch of the water's roaring.

The vowels which are affected in this way have a remarkable hollow and grating sound; in the case of o and e it is occasionally somewhat ö-like on account of the inner rounding in the mouth-chamber.

There are, then, two entirely different kinds of resonance-chambers to be taken into account in examining the Eskimo vowel-sounds, and to them correspond the two chief classes of vowels which I have determined upon in the vowel-system of this language. The same distance between the tongue and the palate will give different sounds according to whether the uvular friction takes place or not. An *e* between two *n*'s and an *e* between two *r*'s are acoustically widely different sounds. — The vowels that are produced without uvular friction are of the same kind as the majority of our vowels; the uvularized vowels are of a more special nature. In French, for example, vowels before *r* are not uvularized; in Danish it may occur, even if to a much less degree than in the Eskimo language.

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The Eskimo uvularized or uvular vowels really contain a distinct vowel element and a distinct consonant element. They stand therefore, as it were, at the boundary between these two chief classes of speech-sounds, or they may perhaps be regarded as constituting by themselves a third class of sounds occupying an intermediate position between the vowels and consonants.

The Greenlandic Eskimo language does not make use of any real [*y*] (as in French tu, rue, Danish ny, German früh) or [*ø*] or [*ö*] (as in French peu, Danish sød; French seul, Danish sön, German schön). The Eskimo sounds which lie nearest to these are [*ü ö*] and [ɔ̈], vowels between *u*—*y* and *o*—*ö*, pronounced with the lips only slightly rounded; they seldom occur long. — The Eskimo wide [*ɪ*] is generally nearer the narrow [*i*] than is the case with the sound in English hit, fill, in (in Danish lidt, find); the *e*-sound is always narrow, even more so than in French été. There is no pure long *i*. — The mid vowel *ə* occurs but seldom, and never as a final as in our languages. The sound is as a rule slightly uvularized in the Eskimo language, (here indicated by the symbol [ɐ]) and as such is not easy to distinguish from the other uvularized *e*-sounds. — Of the *ä*-like sounds, the [e·] which is influenced by *q* is the most peculiar because it lies so far back in the mouth. About in the middle of the mouth lies the half-wide [*ä*], which approximates the French [æ]-sound in fête, but it must be noted that it is short. — A mid-*i* occurs, I think, sometimes before [*k· ŋ·*] and [*λ·*], but I do not know if it occurs sporadically or regularly.

§ 15. In trying to determine the Eskimo vowels according to Bell's and Sweet's*) systems, I have come to the following

*) H. Sweet: A Primer of Phonetics. Oxford 1892. pag. 21.

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results. They show that I have been forced to go beyond the limits of the system, and that not even those Greenlandic sounds that belong inside of the limits are always to be identified with any of the sounds given by Sweet, but in reality belong in certain intermediate positions. — Examples, v. § 13.

Not rounded

[i] hfn [ɪ] hfw [ɾ] mfn [e] mfn
[ə ɛ] mx (nw) and mb (nw) [ë] m (ultra-b) x n [ė] m (ultra-b) b n (or nw)
[e] m ultra-b n [ä] l (ultra-b) x (nw) [å] l (ultra-b) b n [a] l ultra-b n
[ɑ] lb (nw) [ɑ̇] lx (nw) [ɑ̈] lx (nw)

Rounded

[u] hbn [ü] hx (or f) n
[ʊ·] mbn [ȯ] hxw [ʊ̇·] mxn [ȯ̈] h (fx) w?
[o] mbn [o] m ultra-b n [ɔ] l (or m?) ultra-b n
[ɔ] l ultra-b n [ɔ̈] l (ultra-b) x (nw)

These results make it possible to draw up the following table showing a fourfold vowel-system:

	Not rounded				Rounded			
	ultra back	back	mixed	front	ultra back	back	mixed	front
narrow high wide				*i*		*u*	*ü*	
				ɪ			*ʊ*	
narrow mid wide	e ė	ë (ė)	(ë)	*e* *ɪ·*	o	*o* *ʊ·*	*ȯ·*	
		ɛ	*ə*					
narrow low wide	a å	ä			ɔ			
		a	*ɑ̇* *ɑ̈*			ɔ̈		

The uvularized vowels, which constitute the fourth (ultra back) row, and thus in reality stand outside of the ordinary

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system, owe their peculiarity, as we have seen, to circumstances which are absent in the case of the other (normal) vowels, and which find merely an imperfect expression and place in the system under the name "ultra back".

§ 16. The form of the lips at the formation of the vowels remains for brief consideration. The Greenlander's lips are not apt to move out of their natural position of rest which, when it is really typical, is half open, the thick under lip hanging slightly down and being also perhaps somewhat protruded forward. Still, of course, the lips do not remain passive during the formation of the sounds. Aside from their activity at the formation of the consonants, they have here, as in other languages, to meet the demands of the vowels by supplementing the up and down movement of the jaws with their own slight and often unnoticeable bendings, roundings or tightenings.

I shall give here in concise form the results of my observations and notes concerning lip positions at the formation of vowels. They are in large part connected with experiments which I made partly in *Oommannaq* and partly in *Upernawik.*

i and *e* seem to be pronounced as a rule with the lips more open than in our languages. In distinct pronunciation the upper lip is drawn slightly up, as in [*oqʻipːɔq*][1] [*anore*][2] [*qáʷsːɾːt*][3] [*sule*][4], likewise in the case of [e] in [*qiteqʻuλːoɳo*], [*nɛrɛreːrame*] etc. — Especially in the case of *sː* + *i* or *e*, I sometimes saw the lips drawn in this strange manner so that they separated from each other and the corners of the mouth drooped a little. If the upper lip remains motionless, the under lip is only lowered so much the more*).

*) It is very significant in this connection that the word which means: "speaks in the southern dialect" (where in certain words *i* and *e* are substituted for *o* and *u*) is related to a word meaning "to show teeth" (scil. a dog) (Kl. Dict. p. 72: *ersangawoĸ — ersagpoĸ*).

[1] is light, not heavy [2] wind [3] many, several [4] yet.

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The deep [a] forces the under lip still farther down and the distance between the lips (and the jaws) is considerably increased.

In the pronunciation of [eqˈeq], I noticed that the corners of the mouth were very much drawn back and that the mouth-opening was narrow.

All the rounded sounds are pronounced with a narrower passage between the lips than in the case of the *i*- and *e*-sounds.

In a word like [*nʊ·a*], there seems to occur no other change between [*ʊ·*] and [*a*] than a wider opening of the lips; the lips are not drawn back; the *u*-like element is not so much due to any rounding of the lips as to the strongly retracted position of the tongue. Occasionally, however, I observed both marked rounding and marked pouting of the lips, as in [*o·ma*] [*tʊ·s·ʊt*] (*o·* and *ʊ·* with *a* 53[ab]), and there is no doubt that some rounding, even if ever so little, always takes place, narrowest in the case of [*u*]; but as a rule the difference between the rounding and the slip-shaped position of rest is remarkably small. The inner rounding which occurs in the innermost part of the mouth in the pronunciation of those vowels that are influenced by *r* and *q* gives them a more closed character than they would get from the rounding of the lips alone. The long [ɔ·] therefore sounds more closed (and has a deeper natural pitch) than in English all, law or in French mort, although the lip-opening in all these cases is about the same. But the short [ɔ] before r often sounds more open in Greenlandic. The two [ɔ]'s of [*qɔ·rɔrsuaq*] are not quite similar.

The result, if any result at all can be reached, is something like this: when the Greenlander talks, his lip-movements are more tardy and vague than one would expect from the liveliness of his voice and his tongue. His lips move relatively less forward and backward than up and down. In certain words or certain sound-groups, he is satisfied with a mere approach to labialization.

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§ 17. On comparing with each other the various pronunciations of the different individuals as they are analphabetically indicated on the phonetical lists, it appears that in the case of most of the sounds, there are individual differences. Thus on the *t*-list, the indications vary between the two extremes β^{ef} and β^{d} (the points of contact of the point of the tongue), on the *k*-list, between γ^{i} and γ^{ih} (the points of contact of the back of the tongue); on the *v*-list, the indications of the position and form of the lips vary between α^{d} and α^{a}, $\alpha 1$ and $\alpha 32$. Will it do, on the basis of these observations, to determine the articulation of the sounds concerned, to establish a general value for the sound-symbols (letters) illustrated in the lists?

The answer might be that the absolute establishment of a symbol's sound-value always must depend upon an abstraction. In the first place, the manner of articulation of every sound depends very much upon the nature of the whole sound-group in which it occurs. In the second place, there are always personal differences to be taken into account, not only between individuals of different districts, and not only between individuals who live next door to each other, but also in the same individual's pronunciation at different times*).

What we essentially want here, however, is not so much these small individual variations as just the main tendency toward similar places of articulation which is common to all individuals and which is constant in the same individual at all

*) In this respect, my observations quite agree with Hermann Paul's view of the life and formation of speech-sounds (Prinzipien der Sprachgeschichte, 1898) § 37:

„Geringe Schwankungen in der Aussprache des gleichen Wortes an der gleichen Satzstelle sind unausbleiblich. Denn überhaupt bei jeder Bewegung des Körpers, mag sie auch noch so eingeübt, mag das Bewegungsgefühl auch noch so vollkommen entwickelt sein, bleibt doch noch etwas Unsicherheit übrig" etc. § 40: „Wenn schon das Bewegungsgefühl des Einzelnen seine Bewegungen nicht völlig beherrschen kann und selbst kleinen Schwankungen ausgesetzt ist, so muss der freie Spielraum für die Bewegung, der innerhalb einer Gruppe von Individuen besteht, natürlich noch grösser sein, indem es dem Bewegungsgefühle jedes Einzelnen doch niemals gelingen wird dem Lautbilde, das ihm vorschwebt, vollständig Genüge zu leisten."

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times. About each sound-symbol is grouped a number of slightly varying positions of the speech-organs, but among these there will always be found something like a tendency toward a norm, and the sound-symbol stands for this norm.

As regards the variations, the sound will not as a rule be in any perceptible degree acoustically influenced by the small functional inaccuracies, which are only noticed by the critical observer, not by the one for whom speech is but a means of communication. The speakers themselves believe that their pronunciation is in accurate agreement with the sound-pictures which they have inherited through the ear, and they either do not notice the deviations, or consider them of no account. Only in those cases where it is necessary to speak especially distinctly, as for instance to foreigners, to deaf people, in calling at a distance or in speaking solemnly, may there be a tendency purposely to emphasize or even exaggerate a sound's peculiarities *).

The Greenlanders produce this exaggerated effect less by any change of lip-position than by the activity of the inner part of the mouth. I have heard a woman pronounce the interjection [aρ·a·], which expresses great surprise, so that it sounded somewhat like [ɔρ·ɔ·a]. Thus also [*mä'ś·ame*] (certainly) becomes [*mɔç··am·e*] in an indignant tone (*Omnq.*), and [a·p] (yes) becomes [a·ᵊp] (*Nqt.*).

The Greenlander generally talks with great composure and not very loudly, and articulates accordingly, as a rule, distinctly and consistently. The uvular consonants present merely insignificant variations with respect to place of articulation. The lip-sounds and back sounds vary more. Of the point sounds, *l*, *j* and *s* seem to be most variable.

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*) Cf. O. Bremer (Deutsche Phonetik, 1893) § 118:
„Je lebhafter ein Mensch ist, je mehr es ihn drängt seinen Empfindungen auch in seiner Sprache einen möglichst intensiven Ausdruck zu verleihen, um so mehr sucht er auch die akustische Wirkung jedes Sprechschalles zu erhöhen, indem er dessen Klang möglichst extrem gestaltet. Am klarsten tritt das bei den Vokalen zu Tage."

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§ 18. Basis of articulation. — The small changes which in the course of time take place in the words of every language and break down the traditions of form, depend partly upon the physical nature of the organs of articulation and partly upon the nature of the psychical elements that come into play (the psychical basis). Both of these factors are to a certain extent determined by race, and their activity extends through larger or smaller groups of individuals, who forget the old pronunciation when they accept the new. The change may be due to indolence and carelessness as well as to liveliness in the speakers.

With respect to the psychical factor it is sufficient here to refer to what will be said in the following paragraphs about tempo, stress and pitch.

With respect to the physical factor, it is the favorite positions of the organs of articulation that form the prime motive (basis) for the formation of the characteristic shades of sound. The normal position of the tongue can be reckoned from the average of its movement-tendencies.

As for the Greenlandic language, the following description of the tongue's favorite position corresponds best with the results of my phonetic lists: the surface of the tongue is apt to lie near the roof of the mouth, is convex at the back, slightly protruded, and in front stretched out very far toward the teeth. The whole of the movable body of the tongue takes part in the vertical movements without any great curvature at any point. So when the point of the tongue is raised or lowered, all the front part of the tongue follows the movement.

The activity of the tongue stretches over the greatest field possible, namely from the innermost limit at the root of the tongue to the outermost limit at the edge of the upper teeth. The places of articulation lie widely scattered over this extent, so combinations of articulatory movements take a long time.

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One frequently gets an opportunity to observe this normal position of the tongue (point of the tongue analph. β^4) when a Greenlander is speaking; especially if he has lost some of his front teeth, the point of his tongue is continually to be seen in motion just behind the row of teeth and every moment touching their sharp edge or pressing against the inner surface of the upper teeth. What is not to be seen is that raising of the back of the tongue which in many cases takes place at the same time as the articulation in the front part of the mouth, and which acoustically results in the post-palatalization of the vowels.

II. Dynamics of the sounds.

§ 19. The usual tempo of the spoken language must be said to be slow. Especially in the remote settlements, far away from the colonies, the Eskimo generally spoke in a strikingly slow and drawling manner. The inhabitants in such places are few and rarely have anything to do with the Europeans. It was not only the old people, but also the young ones, who spoke slowly, the men perhaps more so than the women. Furthermore I think I have reason to assert that the unmixed Greenlanders speak more slowly than the mixed inhabitants. This struck me especially at the lonely settlements in the Aulätsiwik Fjord south of Egedesminde. These primitive Greenlanders articulated their words with remarkable repose; it was as if there were no such thing as time for them; syllable followed upon syllable steadily, slowly, quietly, as the drops drip down from an icicle which is thawing. The long sounds were dwelt upon for a long time as if they were points of rest in the process of articulation. Such a question

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as *alin·eqaratiλ·o* (and without their (i. e. the nets) getting torn?) lasted between 3 and 4 seconds, and just as slowly were pronounced the words *peq·aŋ·ik·äλ·ärm·at* (since there was nothing yet to be found), and *ajɔrn·arpáλa·rq·a·q* (it is too difficult to do). Not only the long sounds in these words, but also the short ones are extended in duration on account of the andante tempo.

Of course the talking may become rapid and lively when the Greenlander becomes excited for some reason or other, but the real Greenlander does not often become excited.

This characteristic must be kept in mind during the following sections on the quantity and accent of this language.

§ 20. Quantity. All the stopped consonants — the nasalized as well as the unnasalized — occur both short and long (geminated). The same applies to the open consonants (fricatives) except that these are generally voiced when short, whereas they become unvoiced and aspirated when they are lengthened. The fricatives become unvoiced and aspirated when they are lengthened: [*iwik*] plur. [*iφ·it*][1], [*alәq*] plur. [ar*λ·it*][2], [*niqaq*] plur. [*niχ·ät*][3], [*nɛriwɔq*][4] cf. [*neρ·iwik*][5]. Even when the aspirated fricatives are shortest, they seem to be somewhat longer than the other (short) consonants, which is probably due to the special exertion that is necessary in the formation of these sounds on account of the aspiration. *s* too occurs both short and long; but *j* is seldom long, occasionally in XI [*su^{a}j·omut*][6], in XIX [*po·j·ɔq*][7], very often in the song-refrain [*a·j·a··*].

I may remark once for all that after an r — i. e. after an uvularized vowel — the consonant is always long (only a

[1] grass [2] a harpoon-line [3] bird-snare [4] he is eating [5] an eating-place, a table [6] = *sujumut* forward, straight on [7] = *pujoq* smoke.

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very few exceptions, if any!). As a rule, I give no indications of length in such cases. *arnaq* properly = *arn·aq* etc.

Long vowels are very common and have a length corresponding to the length of the long consonants. [ä ü], the neutral [ə ɛ] and the pure [*i*] and [*u*] occur only as short sounds. For long *e* and *i* there is one sound in common which lies just between them both, namely [*e*·]; for long *o* and *u* there is also one sound in common which lies between them both, namely [*o*·]. When these approach very near to pure *e* or *o*, the symbols [*e*·] [*o*·] are used. Long *a* sometimes approaches [ɔ *å*] sometimes [a].

Quantity — the relative length of the sounds*) — is maintained as accurately as is necessary in order that the words may not be misunderstood. The full significance of this becomes clear when I add that very often the meaning of a word chiefly depends on whether a certain sound in the word is pronounced long or short. The Eskimo language is very sensitive and conservative in this respect, so much the more so on account of the frequent phonetical similarity between words of different meaning.

There are but few pairs of words where we find complete similarity; the difference in quantity is in most cases accompanied by a corresponding difference in stress (dynamic accent). Thus in the following examples:

[*ɪn*ˈ*a*·] its lair, nest	[ˈ*ɪn*·*a*· or ˈ*ɪ*ʷ*n*·*a*·] the steep side of a mountain or a house etc.
[*nät*ˢˈ*eq*] a floor	[*n*ˈ*ät*·*seq*] a seal (phoca foetida)

*) The Swedish phonetician, Fr. Wulff remarks about quantity as contrasted with accent: "The quantity is, so to speak, inherent in the words, i. e. depends more upon the nature of the sound-groups than on any special intention of the speaker; I mean the quantity is fixed and involuntary". (Några ord om aksent, i Forhandlinger paa det 2. nordiske filologmøde i Kristiania 1881, ed. by G. Storm 1883.)

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[*usuk*] membrum	[*us·uk*] ground-seal (phoca barbata)
[*uneq*] the armpit	[*un·eq*] a skin without hair
[*ap·a*] an auk	[*a·p·a·*] 1) his companion 2) he brings it, comes with it
[*isˈa·*] his eye	[*ˈis·e*] frost cold
[*isip·ɔq*] he falls into the water	[*is·ip·ɔq*] 1) it is cold 2) he gets or has got something in his eye
[*ikup·a·*] it pecks at it with its beak	[*ik·up·a·*] he joins or folds it together with something
[*atɔrpa·*] he uses it	[*at·ɔrpa·*] he touched it
[*atˈˈerpa·*] he brings it down	[*at·serpa·*] he gives him a name
[*uwaŋa*] I	[*uwaŋ·a*] from there
[*màn·a*] this	[*ma·n·a*] now
[*qisup·a·*] he puts his nails into it	[*qis·up·a·*] he puts fuel on the fire
[*nãm·ap·ɔq*] he carries something on his back	[*na·m·ap·ɔq*] that is enough
[*napiλ·oŋo*] breaking it across	[*na·piλ·oŋo*] killing him or it
[*pasiwa·*] he suspects him	[*pa·siwa·*] he understands it

Very similar to each other are also the following:

[*kina*] who	[*kɛ·na*] a face
[*uneq*] the armpit	[*ʊ·neq*] a burn
[*qilȧk*] the sky	[*qila·q*] the palate
[*qɐŋaq*] a nostril	[*qɐŋa·q*] the sharp edge of the shin-bone; the bridge of the nose
[*qilerpɔq*] he is bound	[*qɛ·lerpɔq*] he begins to long for something
[*qima·wɔq*] he flees	[*qɛ·mawɔq*] he is lively
[*awa·rpɔq* he hits himself on the back of the head	[*a·warpɔq*] he is out reindeer-hunting
[*qiawɔq*] he is weeping	[*qɛ·awɔq*] he feels cold

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In the above words, the quantity is original, i. e. the cause of the difference in quantity is unknown, and there is probably no connection between the two words of each pair (except between *uwaŋa — uwaŋ·a*, *man·a — ma·n·a*).

In the following words, the differences in quantity are most likely due to sound-assimilations caused by the addition of suffixes ("gemination", "geminated sounds"):

[*atɔrpa*] is it used?	[*atɔrpa·*] he uses it [*a*]
[*nuna*] land	[*nuna·*] his land
[*kame·*] his or their boots	[*kam·e*] his own (suus) boot
[*-a·ne*] [*-a·tit*] [*-a·ŋa*] compounded verbal personal suffixes in the singular	[*-a·n·e*] [*-a·t·it*] [*-a·ŋ·a*] the same suffixes in the plural
[*pɪn·e*] the pretty one	[*pɪn·e·*] the ugly one
[*perqip·ɔq*] he is well	[*perqɾp·ɔq*] he is not well, is ill

When a word is used interrogatively, the last syllable is often lengthened. In the case of *ila*, the meaning becomes strongly differentiated besides:

[*ila*] certainly, of course	[*ila··*] is it not so? am I not right?

It is very difficult to find words which have two forms but only one meaning. In Kl. dictionary: *qumaq = quma·q* (an intestinal worm). Yet my memoranda of tales etc. now and then seem to indicate that occasionally long sounds may be shortened and short sounds, lengthened, as in [*ujaraq*] for [*uja·raq*] stone; [*ɪnerpɔ·rɔ·q*] for [*ɪnerporɔ·q*] he is said to be ready; [*pʊ·a·*] for [*pʊ·a*] his bag, sack, etc. (cf. pag. 120).

Very often I heard an interchange of [*i*] and [*ɾ*] in the syllable *-it*, when it occurred at the end of a word: [*suwɾt*] for [*suwit*], what are you doing? what do you want? [a·^{w}*p·ɾ·t*] for

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[a·ᵐp·it], walruses. — This same prolongation of the vowel in final -*it* is also found in the dialect of Labrador*).

If we now sum up the above results concerning quantity in Greenlandic, we shall find that there are four types of combination**):

short vowel + short consonant [*nuna*] land
short vowel + long consonant [*mȧn·a*] this
long vowel + short consonant [*ma·ne*] here
long vowel + long consonant [*ma·n·a*] now

All of these groups may be combined in any order at all. There may be words which consist merely of long sounds, so that the quantity of the single sounds can be determined only by comparison with other words pronounced by the same individual, e. g. [*a·p·a·*][1]. In other words, one or two short sounds may be shut in between a series of long sounds: [o·*qȧt*·a·r*p·a·*][2] [*nak·aŋ·is·aŋ·ilaq*][3]. It has already been shown that a long vowel may occur as a final with some special shade of meaning: [*nuna*] land, [*nuna·*] his land. I have also heard a long consonant as a final: [*ak·*][4] [*ana·na·k·*][5]. Consonants in the beginning of words are generally short, but a long *s* may be heard in [*s·e·rpɔq*][6] [*s·ɾ·t*] or [*s·e·ᵗt*][7].

These features give us the impression that the phonetical character of the Eskimo language is such that any number at all of all kinds of long sounds can follow immediately after each other without being shortened.

In its quantitative principle of sound-grouping, the Eskimo language stands out in sharp contrast to the Indo-European languages, as their phonetical principles are at present. Long

*) Bourquin: Labr. Gr. § 76, 2 (p. 32), note.
**) Just as for instance in Finnish (Jespersen: Fonetik § 391).
[1] he is fetching it [2] he is trying, testing it [3] it will surely fall down [4] there, please take it [5] (my) mother! (in the language of children). [6] it is whistling, hissing [7] willows.

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stopped consonants are not at all common in the latter; they occur for instance in Swedish and Italian*). Syllables consisting of a long vowel + a long consonant are, I think, unknown in most of them**).

In Russian, all the sounds are about equally long, or, at all events, the differences in quantity are so little that they are of no importance for the language***). But even with respect to those languages which, like English, French, German, Danish etc., distinguish between long and short sounds of every kind, I think I can assert that the differences in quantity are less than in the Eskimo language. In other words, a long vowel or consonant in English, French etc. is of shorter duration than the corresponding long sound in Greenlandic.

So much the more strongly is the language characterized by the above types of its phonetical quantity, and so much the greater is the difficulty for the foreigner who is trying to acquire these peculiarities which are so different from what he has been used to in his own language.

§ 21. Dynamic Accent and Rhythm. The following examples are arranged in such a manner that those words are given first whose syllables are all constructed alike (two (three) short syllables or two (three) long syllables), then such words where long and short syllables are combined in various ways.

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*) Jespersen: Fonetik § 391.

**) They are found in Swedish as exceptional cases. Cf. Ax. Kock: "Die Alt- und Neuschwedische Accentuierung" (Strassburg 1901) § 11. The rule for Swedish is otherwise (§ 7): "Eine silbe mit hauptaccent enthält nur einen langen laut, eine silbe mit halbaccent nur einen halblangen laut; die übrigen laute dieser silben sind kurz."

***) Sweet: Russian Pronounciation, Transact. Philol. Soc. 1877—79. — Jespersen: Fonetik § 391.

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I. Similarly constructed syllables.

2 syllables in a word; the stress is the same in both syllables:

[*ik·a*][1] [*sak·o*][2] [*niʷk·o*][3] [*a·ta·*][4] [*ɔ·tɔq*][5] [*kuλ·ɔq*][6] [*sus··ɔq*][7] [*ik·e·*][8] [*aρ·a·*][9]

In the following words, the stress is sometimes weakened in one of the syllables, so the stress is uncertain:

[*kina*][10] [*sɔ̇na*][11] [*sila*][12] [*nuna*][13] [*siko*][14] [*ise*][15]

2 syllables in a word; final stress (the last syllable stronger than the first):

[*tikˈeq*][16] [*qanˈɔq*][17] [*anˈa·*][18] [*qilˈȧk*][19] [*sawˈik*][20] [*nȧjˈa·*][21] [*amˈe·*][22] [*tȧsˈeq*][23] [*isˈeq*][24] [*alˈeq*][25] [*apˈut*][26] [*eqˈe*][27] [*neqˈe, nɛqˈe*][28]

3 syllabes in a word; the same stress on them all (or a slight tendency to weaken the middle stress a little):

[*takisɔ̇t*][29] [*nulia*][30] [*pania*][31] [*panɪŋa*][32] [*awoŋa*][33] [*ikane*][34] [*täs·o·na*][35] [*ke·artɔq*][36] [*un·ūm·ȧt*][37] [*ɔrn·ip·a·*][38] [*as·arn·eq*][39] [*o·m·ȧn·aq*][40] [*nɔ̇·sɔ̇·ta·*][41] [erqerqɔq][42]

3 syllables in a word; weak final stress:

[*qupiwˌa·*][43] [*ataŋˌo*][44] [*pamiˌɔq*][45] [*sɛ̇qinˌeq*][46]

4 or more syllables in a word; the same stress on them all (or a slight tendency to differentiate as indicated in the brackets):

---

[1] over yonder! (toward the north) [2] weapon, implement [3] dried meat [4] his or her grandfather [5] a seal which has crept up (on the ice) [6] thumb [7] never mind! [8–9] (interjections) [10] who [11] what [12] the air, the weather [13] grounds, land [14] ice on the sea [15] an eye [16] fore-finger [17] how [18] his or her elder brother [19] sky [20] knife [21] his younger sister [22] their skin (the animals') [23] inland lake [24] an eye (= *ise*) [25] harpoon line [26] snow on the ground [27] corner, corner of the mouth [28] meat (of a dead animal) [29] long ones (Greenlandic boots) [30] his wife [31] his daughter [32] my daughter [33] toward the north [34] over yonder [35] in that way [36] one with a cut in (name) [37] when it became night [38] he goes over to him [39] east wind [40] (usual name applied to mountains) [41] (place-name) [42] the little finger [43] he cleaves it [44] listen, pay attention! [45] tail of an animal [46] the sun.

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[*pam,iu,a*] [1] [*t'äs,ius'aq*] [2] [*qiwiarame*] [3] [*aŋajua*] [4] [*oruluw,ɔq*] [5] [*täs·aŋ·a·'n·aq*] [6] [*uλ·a·rsa·'sɔ·q*] [7] [*ta·'ma·'kaλ·arλ·it*] [8]

II. Unlike syllables.

Regularly alternating stress:

[*sin'ip·is'e*] [9] [*,is'ɛŋ·aw'it*] [10] [*qap'ap.oŋ'ut*] [11] [*an'ɛ.ğam'e*] [12] [*nik'ɔrqaŋ'ɔq*] [13] (Up.) [*kaŋ'a·'t'i'aq*] [14]

[*ulu'arq'ɔrt'ɔ·q*] [15] [*ajor'un·'arp ɔq*] [16] [*kiapáλ'a·rq'a·q*] [17] [*sikoiu'it·'ɔq*] [18] [*ɛŋ'ut·'aq*] [19] [*p,isiniaralu'arp'oŋ·'ɔ·q*] [20]

Irregularly alternating stress:

[*'uk·us'is·'ät*] [21] [*p'ɛn·'is·üs'e·*] [22] [*ilul'is·'ät*] [23] [*'ars'arnɛr'it*] [24] [*'as· arn'erso'aq*] [25] [*ip'um·'erλut'it*] [26] [*,ërŋut'áŋ·uar'a*] [27] [*neruk'arλoŋ'it*] [28] [*an,is·'áŋ·il'atit*] [29] [*'ɛn·'arnial'erpoŋ'a*] [30] [*puj'ɔrsimas'ɔq*] [31] [*tak'oŋ·'o·k'up·oŋ'a*] [32] [*t,arq,arφ,is·,a·r'uλ·un'e*] [33] [*n'ak·'aŋ·'is·'áŋil'aq*] [34] [*p'e·rs'ɛn·'arλoŋ'o*] [35] [*ut,ɔrq'aŋ·uleri'artuler'a·mata*] [40]

The dynamic accent in the Eskimo language is only to a slight degree emancipated from the quantity. Stress and quantity go hand in hand, so that it is difficult to say which of them is primary. Before a long unvoiced consonant, there is always

[1] its (the animal's) tail [2] place-name (cove in a fjord) [3] when he looked around him [4] his elder brother or his elder sister [6] he is peevish or is begging for something [5] suddenly [7] it will be east wind [8] let that be enough for the present! [9] are you (plur.) sleeping? [10] have you (sing.) fallen through the ice? [11] we are in a pitiable condition [12] because he went out [13] (he) stands on his feet [14] (place-name) [15] one who (he who) has fat cheeks [16] it is (he is) probably bad [17] it is too warm [18] eternal ice [19] a bee [20] they would like to buy something, they say [21] (place-name) [22] its beauty or how pretty it is! [23] (place-name) [24] aurora borealis [25] strong east wind [26] keeping your mouth shut [27] my little foster-son [28] feeding them (the dogs) [29] do you not want to go out? [30] I want to go to bed [31] a smoked bird or fish [32] they are tired of seeing me [33] capturing seals through holes in the ice [34] it will surely fall down [35] only taking it away [40] because they began to become older and older.

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strong stress; on a long voiced sound (*a·*, *m·* etc.) there is likewise necessarily strong stress.

If a series of similarly constructed syllables follow each other, each one of them receives some stress and in quiet speaking, they all receive the same stress. At all events the shades of difference between the stress in such syllables are much finer than those we are accustomed to in our language and they do not furnish any characteristic feature in the pronunciation of such words. That which is characteristic is the monotony, the even distribution of the stress (the even pressure of the outgoing breath).

In words of two or three syllables, such even stress is frequent. The more syllables a word consists of, the greater is the chance that one of the syllables will be differently constructed from the rest. An unstressed syllable occurs in the position of a short syllable before or between long (strong) syllables. If a short syllable comes before a long one (type: *ata·* or *kata·*), the first is unstressed in relation to the last (*at'a· kat'a·*). But two long syllables following after each other are evenly stressed (*'at·'a· a·'t'a· 'a·t·'a· 'a·t·'a·k*). Now since short syllables are not much more frequent than long syllables, we may conclude, that the relatively unstressed syllables are not much more frequent than the strongly stressed ones. The unstressed syllables are, accordingly, not nearly as numerous in the Eskimo language as in our language. The language has no words which are unstressed; most of its polysyllabic words contain more than one stressed syllable. And the stress always occurs before or in conjunction with the long sounds (consonants or vowels).

Yet there is one syllable in the word which, no matter what its quantity, seems to have a tendency to attract the stress to itself; that is the last syllable. Even a short vowel in the end of a word is never unstressed. If the word ends in a consonant (*q*, *k*, *t*), its last syllable is always stressed, even if the vowel in it is short.

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On account of the whole character of the language (all conceivable combinations of long and short sounds possible; the stress bound to the quantity and vice-versa*); continual quantitative changes on account of the varying suffixes), it presents great rhythmical irregularity and a number of types of rhytmical combination. The long words are scarcely ever alike in structure. Therefore one of the chief features of the phonetical character of the language is its uneven heavy rhythm. This character of the rhythm is closely connected not only with the quantity of the sounds, but also with the mode of articulation (the intermittant coming and going of the voice in the succession of voiced and unvoiced sounds), and is thus in part mechanically determined.

In short words, as we have seen, the expiratory stress is most frequently laid on the last syllable and is strongest there, a circumstance which is most noticeable in words of two syllables ending in *q*; in the long words, where several suffixal endings are piled up, a central word-stress or a dynamic synthesis is entirely lacking. Some suffixes, when added to words, cause them to change their stress, some do not. The added suffixes themselves often become centres of stress or cause the expiratory stress to be evenly distributed to several parts of the word (just as in a sentence in our languages).

Change of stress and quantity does not take place in any word without an accompanying change of the meaning of the word, and this in turn occurs only through some change of suffix.

I shall give some selected examples of these frequent changes of stress in the Greenlandic Eskimo language.

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*) I do not maintain that it is absolutely impossible for the stress of a syllable in a Greenlandic word to be strengthened without any lengthening in the quantity of the succeeding consonant; but such cases are rare.

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In the plural of many words of two syllables. Ex.:

am'eq a skin	*'am·'it* skins
nan'oq a bear	*n'an·'ut* bears
um'ik beard	*'ũm·'it* beards
uil'oq shell	*u'iλ·'ut* shells
al'oq sole of the foot	*'aλ·'ut* soles of the feet
oq'aq tongue	*'oq·'ät* tongues

In the plural of many words of three syllables. Ex.:

awat'aq a bladder (of sealskin)	*aw'ät·ät* bladders
t'a·lut'aq a decoy sail	*t'a·l'ut·'ät* decoy sails
uwin'ik meat (on a living being)	*uw'in·'it* meat (on living beings, plur).
qaŋat'aq cavern (in a rock)	*qaŋ'ät·'ät* caverns

Likewise in many nominal and verbal derivatives:

mal,ik a wave, billow	*m'aλ·'erp'oq* it (the sea) is rolling
sanaw,oq he works	*s'an·'ät* implements, tools
qinuw,oq he asks (for something)	*q'in·'ut* prayer
pulaw,oq slips in	*p'uλ·'ät* a trap, especially a fox-trap
ine couch, lair	*'in·'ip·'oq* gets lodgings
in'a· its or his couch or lair	*'in·'arp'oq* lies down, goes to bed
in,uk human being	*'in·'up·'oq* come to people, meet people
nan'oq bear	*n'an·'up·'oq* has captured a bear

Likewise in many modal-like verbal suffixes and nominal inflectional forms:

aniw,oq he comes out *an'ip·a·* he brings it out, throws it out	*'an·ip·a·* comes out and brings it with him out (his work or something which is to be carried away from the house).
tuniw,a: he gives him (something)	*t'un·i·,up·a·* gives it (to some one)

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tiŋiw,oq it flies away	*t'iŋ·'up·a·* it flies away with it (a bird)
tiǧuw,a· he takes it	*t'iχ·'up·'a·* he takes it and something else with it
'a·ʷlaw'oq moves, roams about	*'a·ʷλ·'arp'oq* takes his departure, has started
kut'ap·'oq cannot speak plainly	*k'ut·'ä·ʿp·'oq* speaks plainly and distinctly
'iʷλ·'it you	*il'in·'ut* to you
am'eq skin	*'am·im'ik* Instrumental of *ameq*
	'am·'ik·'ut Vialis of *ameq*
'am,i'a its (ejus) skin	*'am·'e* its (suus, reflexive pronoun) skin

§ 22. The musical accent (pitch and intonation) of the Greenlandic language I have examined in various ways, both purely empirically and experimentally.

On my journey through North Greenland, I became interested in the marked differences of "accent" in the different districts. The Greenlanders themselves have a very good ear for these peculiarities of dialect.

The simplest way is merely to indicate the relative height or depth of pitch by different accent-marks, as for instance [*àp·á*], where ` means lower pitch, and ´ means higher pitch. I have used this system of designation (I) throughout all my notes, yet not as obligatory, but only whenever the musical accent of a word arrested my attention. In the following remarks, I designate low pitch by ˩, medium pitch by ˧, high pitch by ˥. — Secondly (II), in some cases, I tried to determine the pitch in terms of musical notes on the basis of the a-tone of my tuning-fork, hoping in this way to get at the typical tone-movements of the various dialects. Even if I did not succeed in this, yet I managed to reproduce some of the

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sound-movements which are typical for the North Greenlandic language as a whole. I proceeded after this manner: as soon as my ear had caught a word in the Greenlanders' conversation with each other that I considered especially adapted for this kind of examination, I concentrated all my attention on the memory of what I had heard, half thinking and half humming it with the same intonation with which the Greenlanders had said it; then comparing it with the *a* of my tuning-fork, I could estimate its approximate tone-relations. If I have not always been able absolutely to determine the tones, yet the intervals between them are, I hope, correct.

Besides what I have thus taken down from bits of every-day conversation which I happened to overhear, I have also obtained some specimens of the music of the words through direct experiment (III). For this purpose, I used the same Greenlanders as for the experiments in articulation. I asked them to say a certain word or sentence and repeat it again and again. The Eskimo proved quite willing to do this. I tried to separate out the tones of voice from the words, and to avoid thinking of the natural pitch of the single sounds; I imitated their voice without articulating the sounds of the mouth; then when I thought I was able to sing at least the essential tones which constituted the limits of the musical movements of the voice during the pronunciation of the words, I easily found them on a violin, which had been tuned after my tuning-fork, and could write them down directly after the experiment. Of course this group of specimens does not as a rule show as great transitions of tone as the former group, where the life of the language plays a greater part. The words here are pronounced in the quietest and most indifferent way, therefore with a minimum of musical swell. — Finally, I have lying before me some rough graphical illustrations (IV) of the rising and falling tone-movements in words and sentences which I have heard.

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Although I have devoted all possible care to the examples given with exact musical notes, yet I dare not claim that they are anything but mere attempts, for whose inaccuracy I must entreat the indulgence of specialists in these matters. I have dared to undertake these experiments more in reliance upon my good musical ear than because I had any training in such research through earlier experiments.

I. The relative pitch, determined according to 3 grades.

(˩ low pitch ˧ medium ˥ high pitch).

Monosyllables.

[*kʊ·k*˩˥][1] VIII [*e·q*˩˥][2] Rdb. [*a·p*, *a·ᵊp*˥˩][3] Nqt. [*m·*˩˥][3] or [*ɔ̃*˩˥][3] Up.

i. e. strong nasalization, voiced, without any oral articulation.

[*ȧᵗt*˧][4] [*a·ᵗt*˩˧][5] [*a··ᵗt*˥˩˧][6] [*sɪ··t*˥˩˧][7]

Dissyllables.

[*qarλɪ·t*˩˧][8] XIV [*uneq*˩˧][9] II [*ɪmaq*˩˧][10] II [*ik·a*˩˧][11] [*ma·ne*˩˧][12] XVIII [*ik·e·*˩˧][13] Omnq. [*pȧᵗn·e*˩˧][14] Omnt. [*as·aq*˩˧][15] Rdb. [*am·ut*˩˧][16] [*qum·ut*˩˧][17] III [*na·k·a*˩˧][18] Up.

[*ata··*˥˩][19] III [*aha··*˥˩][20] Up. [*aρ·a··*˥˩˥][21] Qrj. [*pɪqa··*˥˩][22] [*ila··*˥˩][23] cf. [*ila*˩˧][24] [*awɳ·ɔ·q*˧˩˧][25] II [*ma·wna*˥˩˧][26] [*na·ʷjaq*˥˩˧][27] Up. [*tʊ̈·luk*˥˩˧][28] Uk. [*qup·aq*˥˩˧][29] [*nɪ·saq*˥˩˧][30] Omnq.

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[1] a river [2] (interjection) [3] yes [4] word used by children in play when they touch the one they are trying to catch, = Eng. "you're it!" [5] interrogative particle often added to a verb for the sake of politeness [6] (interjection) what did you say? [7] copse of willows [8] trousers [9] the armpit [10] sea [11] (he is) over yonder [12] here [13] interjection (on shivering) [14] his (sua) daughter [15] the palm of the hand [16] downward [17] upward [18] no [19] its lowest part [20] interjection = $a\rho\cdot a\cdot\cdot$(?) [21] (interjection) [22] he owns it [23] is it not so? am I not right? [24] certainly [25] yes is said [26] through here [27] a gull [28] an Englishman (or American) [29] a crack [30] a porpoise.

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Trisyllables

[täsane][31] XVIII [täs·ʊ·na][32] XVIII [täs·aŋ·a][33] [täs·oŋa][34] VIII [na·laŋa][35] [tikɛŋ·a][36] XVIII [ikap·ut][37] [mak·ua][38] Gdh. [qe·maŋɔq][39] Up. [nɪ·sarnaq][40] Omnq. [ɪn·ɛrit][41] Uk. [quλ·uk·ät][42] Omnq. [ɪm·aqa][43] III [erqerqɔq][44] Prō. [ataŋ'o][45]

[patip·a·][46] I, II [tuniwa··][47] [niʷt·a·'p·a·][48] [pas·up·a··][49] I, II [aʷp·up·a··][50] III [o·m·än·aq][51] Uk.

Words of four syllables.

[sɪnip·ise][52] Iλ. [tät·a·ŋa·ra][53] Omnq. [täs·aŋa·ɪn.aq][54] Omnq. [as·ile·wik][55] Iλ. [asukiak][56] Arq. [kaφ·esɔrpit][57] Uk. [su.s·a·ʷŋilaq][58] Omnq.

Words of five or more syllables.

[pujɔrs·imasɔq][59] Omnq. [tä·ma·ka λ·ar λit][60] Omnq. [qanɔq nuänaritŋa·uk][61] Omnq. [anis·äŋ·ilatit][62] Rdb. [iλ·it [n'öt·oŋi'artʊ·tɛt][63] Iλ. [anajuŋuɪn·un·a··][64] Arq. [pe·rsɪn·ar λoŋo][65] Iλ.

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[31] there [32] through there [33] thence [34] thither [35] his master [36] come to me [37] they are jumbled together (in play) (children, dogs, fish in the water) [38] these [39] is lively and gay [40] porpoise [41] (place name) [42] dried strips of a kind of little halibut (Pleuronectes cynoglossus) [43] perhaps [44] the little finger [45] take care [46] he lets his hand fall on something or rest on something [47] he hands him (something) [48] has it begun to snow? [49] he is working at it [50] ? < *aput*: *ap·up·a·*, the snow has covered it (something lying outside the house) together with the ground [51] (place-name) [52] are you sleeping? [53] I dare not look at it (for fear, since it looks so frightful) [54] suddenly [55] picture-place (about a camera) [56] I don't know [57] do you drink coffee? [58] it is not worth anything [59] smoked bird or fish [60] let that be enough for the present [61] how are you satisfied with it? [62] won't you go out? [63] was it you that played on the harmonica? [64] ? < *ana(q)*, excrement, *-ju-* can easily, *-ŋuit-*, the little ones, *-una*, he (was said to a little child whose mother quickly carried it out of the house) [65] immediately taking it away.

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[*tam,a·nie·rq'ɔ·rqa·ᵊq*] [66] Omnq. [*a·ʷkiartɔqn·a· siko*] [67] Omnq.

[*ajoŋ.ip.aλa·rqa·q*] [68] Ka. [*ajus·aŋɛqa·q*] [69] Arq.

Although such small masses of sound as monosyllabic words are rare, yet the examples given above show four different varieties of intonation. There can be no doubt as to which of these varieties is most usual in North Greenlandic. The level tone is very rare, the tone of the voice generally being either rising or falling. The question is, which of the formations represents the fundamental element of the musical accent in Greenlandic? is it ↗ or ↘? I do not hesitate to say that it is the former formation, the rising tone. Such a formation as [*a·p*] with the falling tone is perhaps not unusual in this word, but it is not typical of the melody of the language. [*a·p*] with the rising tone is at least just as frequent as the other and it corresponds to the fundamental musical character of the language.

Furthermore there is the formation [*a··t*], which constitutes a transition to words of two or more syllables. Even if according to origin it should be secondary in relation to the former, simpler formation, yet it must now be considered as an independent intonation in the Greenlandic language, which has become connected with certain words and makes them more clearly understood. I shall speak of it as the compound tone*).

Both of these, the rising and the compound tone, we now find again in dissyllabic words, most frequently, however, the

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*) I presume now that it is also with the help of this difference in musical accent that the Greenlanders distinguish between the two words: [*is.e*] an eye, and [*is·e*] cold, frost. I did not succeed in getting this point cleared up while I was in Greenland.

[66] it (he) is certainly here [67] how the ice is thawing! [68] it (he) is too good, exceedingly good [69] it (e. g. the ice) will not become poor.

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former. With respect to the latter, it must not be confused with the intonation in [*pɑ̨a..*], which cannot be considered as merely a modification of the compound tone, but must rather be taken as a third independent type (compound), which, however, is limited, I think, to interrogative or emphatic words ending in long *a*. Here there is first a sudden downward leap, and then a chromatic rise during the long *a*, but in [*a··t*], the beginning is a chromatically falling tone to be followed by a sudden upward leap.

Thus a change of tone often takes place during the pronunciation of a long sound, and this change is chromatic, not sudden. But changes of tone from syllable to syllable seem to take place in sudden leaps.

In words of three syllables, the first compound intonation is the normal one [*täsane*]; each syllable has its own pitch, the first high, the second low, the third high and generally higher than the first. There is no chromatic slur between these tone-movements. When it is seen how closely this intonation is associated with the formations of three syllables, it is tempting to consider its appearance in some few dissyllabic and monosyllabic words as evidence of their having originally consisted of three syllables. — The simple, rising tone belongs especially to dissyllabic words.

Among polysyllabic words, there are many where the syllables fall into pairs, each pair having the first intonation [*anis·äŋ·ilätit*]; in others, this arrangement is broken by the appearance of the compound intonation; of course the tendency of the language to the formation of compounds causes a continual conflict between these two musical formations.

Psychological motives may also come into play in a high degree. Deviations from natural intonation are pet means of producing oratorical effects; by this means, questions, concessions, ironical insinuations etc. may be thrown into relief.

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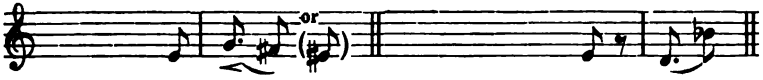
The following specimens of the language, where it is attempted to find more accurate and absolute indications of the movements of the voice, confirm and illustrate what has already been said about these matters.

II. The musical movements of the voice in natural speech as accidentally overheard.

The tones are approximately determined in relation to the *a* of my tuning-fork.

(Up.) [*u η· a··*][1] (Omnq. woman) [*a ρ· a··*][2]



(Omnq. woman) [*aj'ö s·ö s'e·· a*][3] (Iλ.) [*s i n i p· i s e*][4]

(Ka. woman) [*a j o η. i p a λ·* a r *q* a· *g*][5]

(Arq. child) [*u w a η a an·a··*][6] (Arq.) [*aj ɔ rn* a r *q* a· *q*][7]

III. The musical movements of the voice in natural speech determined by experiment with Greenlanders from different districts (indicated by Roman numerals, cf. Introduction p. 8). The tones were determined on a violin, which had been tuned after my tuning-fork, immediately after the pronunciation of the words. The single bar-line indicates a pause of arbitrary length between the words.

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[1] are you there, you little one! (?) [2] interjection (wonder) [3] what a pity! [4] are you sleeping? [5] it (for instance the weather) is exceedingly good! [6] my (or I) grandmother! [7] it is impracticable, difficult.

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XVIII [ɪ n ʊ· λ· u a r̃n a]1
[ɪ n ʊ· λ· u a r i t· e]2
XV [ɪ n ʊ· λ· u a r̃n a]1
V [ɪ n ʊ· λ· u a r̃ n a]1
[i n o· λ· u a r i t· e]2
XIII [ɪ n o· λ· u a r̃n a]1
XVIII [q u j a n a q i λ· i λ· o]3
XV [q u j a n a q i λ· i λ· o]3
XIII [q u j a n a q i λ· i λ· o]3
XVIII [a n· ɛ q a· ɪ t s o· r u n a]4
VIII [a n· ɛ q a· ɪ t s o· r u n a]4
V [a n· ɛ q a· ɪ t s o· r u n a]4
XIII [a n· ɛ q a· ɪ t]4

---

[1] good-bye, farewell (2. pers. sing.) [2] good-bye, farewell (2. pers. plur.) [3] thank you, the same to you [4] does it hurt very much? yes certainly it does

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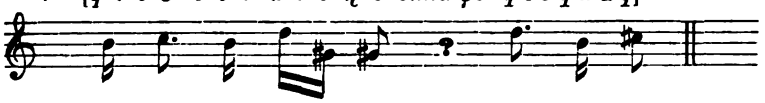
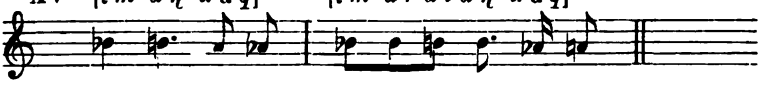
XVIII [*q i s ʊ·s o r a l oɳ o s ʊ n a·φ a q e r q u a q*]⁵

V [*q i s ʊ̃· s o r a l o ɳ o suna·φa q e r q u a q*]⁵

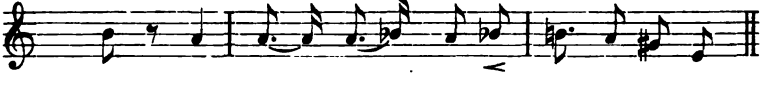


XV [*ɛ m· a ɳ· u a q*]⁶ [*ɛ m· a r a l a ɳ· u a q*]⁷

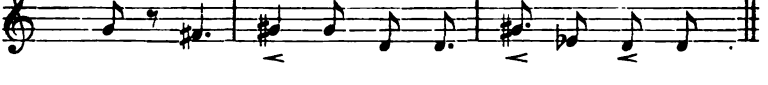


V [*ɛ m· a r a l a ɳ· u a q*]⁷ XIII [*ɛ m· a r a l a ɳ· u a q*]⁷

XVIII [*a ʻ t· a· ʻ t t a· m a· ʻ t· u m i k t a k u w o ɳ a*]⁸



IX [*a ʻ t· a· ʻ t t a· m a· ʻ t u m i k t a k u w o ɳ a*]⁸



XVIII [*s u m e· k· u m a l ʊ· n· ɛ t*]⁹ XV [*s u m i· k· u m a l ʊ· n· ɛ t*]⁹

IX [*s u m ɛ k· u m a l ʊ· n· ɛ t*]⁹

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⁵ in the belief that it was wood — just think of it, then it was only seaweed. ⁶ a little bit ⁷ a very little bit ⁸ I have never before seen the like! ⁹ no matter where I shall be, or come.

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VIII [ʊ·t·ɔrniaraluaramasusa·rpoŋa][10]

V [ʊ·t·ɔrniaralua·ra·ma·susa·rpoŋa][10]

IX [ʊ·t·ɔrniaralu a r a m a susa·rpoŋa][10]

XIII [ʊ·t·ɔrniaralu a r a m a susa·rpoŋa][10]

IX [a·'t·a·'t tusarpiuk][11] IX [nàsik·aλ·arλaŋa][12]

XIII [nàsi k· à λ· a r λ· à η a][12] II [nas'ik·'àλ·'arλ·aŋ'a][12]

IX [o q a l u t· u a r n i a r i t][13]

XIII [o q a l u t u a r n i a r i t][13]

[10] I went out to catch outoks (seals which have crept up on land), but I did not get any [11] have you not heard it until now? [13] first let me go up and spy (from the mountain)! [13] tell a story!

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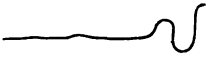
IV. The graphical illustrations mentioned above consist of a little collection of broken or curved lines drawn with a lead pencil, which I let my hand trace at the same time as I attentively listened to a conversation that took place so far away from me that I could not distinguish the single words, but only follow the voice of the speaker. I thereby succeeded in getting an image of the movements of the voice during a rather long discourse, without having to stop to memorize what I heard. The result is in return the more abstract.

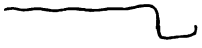
I shall not give all the drawings but only some of the most typical ones:

1.

2.



3.



To take an example, to the first type would belong a period which, after having remained at about the same pitch, ended with a word of the formation: [*perq·ɔ·rqa·q*] (so far as I know, it is so) with a strong, oratorical emphasis of the difference of pitch in the last two syllables. As will be seen, the greatest differences of pitch occur as a rule in the end of a period (sentence, a short narrative); and I should judge that the last two types are the most usual ones (cf. the examples given with musical notes), that is to say, the end of a period as well as of a word most frequently contains an ascending interval. But even if it is not a rise that takes place, there is very often, especially toward the end, a strong point of musical emphasis in lively speaking. This emphasis is probably as a rule only an oratorical exaggeration of the natural musical word-accent in the last syllable of the period. In those parts of the period which precede the end, similar tone-movements take place, only in a less marked degree. In the drawings given, they must be

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supposed to lie on both sides of the unbroken line. The line for such a word as [*ajusːaŋːeqaːq*] would look like this:

which corresponds to the first type. I am not so sure, however, that a slight rise will not often take place at the end here (and in similar cases), already in the vowel a, and rapidly fading away in the unvoiced *q* without having attained to the height of pitch of the preceding syllable; if this is the case, we have here too one of the last two types. It is certain, at any rate, that it is not necessary for a period to be interrogative to have the rise of pitch at the end, just as, on the other hand, it is not absolutely necessary for a period to have such a rise at the end in order to be interrogative. Yet as a rule, questions have the rise in pitch. Typical examples of the tone-movements in Greenlandic are, in my estimation, such as those in [*sinipːise*][1] [*susaːrpoŋa*][2]. There is a constant tendency to let the voice change in pitch from syllable to syllable with ascending intervals. The whole melody of the voice has, as it were, a regular type, which agrees with this fundamental rule. The compound intonation is not at variance with this tendency; if there should arise any disagreement between the two through the collocation of the parts of the word or the sentence, a kind of tone-assimilation takes place within the word or the sentence, whereby the pitch of the syllables is adapted to the type (as when ˥˩˥ is changed to ˦˥.

Such a formation as [*sumːkːumalɔːnːt*][3] !makes an oratorical impression by the side of the natural [*sumːkːumalɔːnːt*].

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[1] are you sleeping? [2] I did not catch anything. [3] wherever I may happen to be (in the future).

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§ 23. My immediate general impression of the musical accent in the North Greenlandic language, from notes in my diary.

The singing quality in the North Greenlandic language is not equally marked everywhere, but varies from fjord to fjord. It seemed to me to be most noticeable in Egedesminde District and fartherst out on the *Nu·suaq* Peninsula (especially at *Niaqornät* in *Oommannaq* Fjord). On the whole, the tone-intervals of the language are not greater than those which for instance may occur in Swedish, Italian and French *). Women and children have the singing quality in the most marked degree. That which J. Storm has said in general about sentence-melody, that it at any given moment is like "the beginning of a musical melody" **), can be verified by anyone who has had an opportunity to hear this expressive language spoken by a lively voice.

I shall proceed to give some direct impressions which the language made upon me in the different parts of North Greenland, where I took down notes about these matters in my diary.

Arqittoq (January 1901). The language in this district has the singing quality to a marked degree, and sounds especially Eskimo I think. A long account, especially in the mouth of a woman, can reach a very high pitch, perhaps h or c; shortly before the end, the pitch becomes very much lower. But even in quite short, indifferent expressions like: one can

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*) Cf. for instance J. Storm. Englische Philologie I, 2nd Ed. (1892), pp. 218—219.

**) J. Storm u. s. p. 207: "Der Gesang liegt in der Redestimme als Keim; durch eine kunstmässige Verwendung desselben Instrumentes wird Rede zum Gesang". Perhaps a comparison between the speech-melodies written down in the former paragraph and the Eskimo song-melodies given at the end of this work might give useful results with respect to the relation between the voice of speech and of song among these primitive people.

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very well walk here! or: how delightfully down hill it is here! — may be heard the greatest transitions of tone of such a nature that one unconsciously gets the impression that the speakers are down-right whole-souled, good-hearted people with lively and emotional temperaments.

Qeqertarsua'tsiaq (February 10). It is a pleasure to stand and listen to a group of Greenlanders eagerly discussing the condition of the fjords. How is the ice? is it possible to drive around this or that point of land? is there open water in the sound by the Sea-dogs' point? is the ice cleft by the current? can it bear out there beyond Eagle Mountain, or must one follow the beach? who was there last? The voices become eager, high; questions and answers follow closer upon each other; the flow of talk runs rapidly, warmly, naturally, in long, period-like words, which are kept at the same high, shrill pitch until the voice, just before it is about to cease, makes a great plunge into the deep only to rise again immediately to an interrogative height — or vice-versa ends in the deep, thus establishing a fact. Scarcely is the sentence at an end before it is succeeded by a flow of talk which is pitched in another key.

Jakobshavn (November 1900). One evening in *Iλ·umiut* I listened to a long tale which an old Eskimo woman was telling in a half whisper and in a strange manner as if with two interchanging voices.

Oommannaq (July 1901). In listening to the musical accent in a long, rapid account of some event, I am always struck by the continual interchange between two different keys; the speaker almost seems to talk with two different voices, now a high voice, which gradually comes into play during the flow of talk as the speaker becomes excited in reporting lively episodes or conversations or anything which rouses his enthusiasm; now a lower voice, which he uses when he has come

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to the end of a conversation, or when he is giving some explanation or preparing a new turn in the course of events.

A woman stood outside of the house and said something to a visitor who was taking leave of her (a *tikera·rtoq*); the flow of talk was pitched at about h or b (the tuning-fork used).

They call in a high — often in a very high tone, about corresponding to light-hearted laughter.

III. The combination of the sounds.

§ 24. The transitions and glides between sounds take place in the Greenlandic language in accordance with the basis of articulation described above. As in the case of the tongue, each of the other organs of the mouth has its favorite position and its favorite movements, which are peculiar to this language and which explain many of the peculiarities of the life of the sounds, the tendency to uvularize or nasalize vowels, to velarize the neighboring vowels, to change *q* to *ŋ* and *r* to *ŋ*, to palatalize *k* before *i*, to let *t* open into an *s*-like groove before *i* etc. The sound-assimilations also take place on this basis.

Between two vowels occurring next to each other the half consonantal transition-sounds *j* and *w* are sometimes present and sometimes dropped. Ex.:

[*uiarpa·*] or [*uʷiarpa·*, *uwijarpa·*] [1]
[*tuawiɔrpɔq*] or [*tuʷaʷiʲɔrpɔq*] [2]
[*iλ·oa*] or [*iλ·oʷa*] [3]
[*uaŋa*] or [*uwaŋa*] [4]

[1] he goes (rows etc.) outside of it [2] he hurries [3] his house [4] I, mine.

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After I had been in the country a couple of months, I formed another opinion of the nature of the aspirated *l* [λ] than the one expressed in the reproduction of this sound as *dl* (*gdl*, *vdl*) or *tl* which is given in Kleinschmidt's orthography. With respect to this matter I find the following remark in my diary (Sept. 2, 1900): "It seems to me now that it is not necessary to indicate any constant *t* or *d* before unvoiced *l*, but the sound is no doubt very often introduced by [χ], a sound which, however, I still find difficult to understand distinctly. A lip-articulation [*w*] may also introduce it." After that time I began to indicate it in my notes by ^{h}l or $\chi^{h}l$, whereas I now write [$^{\chi}\lambda$] or merely [λ].

My investigations of this χ-element gradually gave me a clearer insight into its nature, until I finally settled upon the following result: when *i* or *u* (high vowels) is followed by an aspirated fricative [λ ς φ] the whole surface of the tongue is raised tolerably high during the articulation of both the vowel and the consonant. On account of the strong aspiration which is necessary for the consonant, this raising of the tongue often sounds like a *g*- or χ-like glide or transition-sound between them both. It is in reality a kind of very loose prevelarization (γ^{i}) or postpalatalization of the vowel (γ^{h}) (cf. § 11, end of § 23), which may or may not occur in the same words, and which, in some cases, must undoubtedly have been original with the words, but is in other cases rather a secondary result of the nature of the adjacent sounds.

Ex.: [*iλ·o*] or [*i*$^{\chi}$*λ·o*, *ïλ·o*][1] [*iφ·it*] or [*i*$^{\chi}$*φ·it*, *ïφ·it*][2] [*kiλ·ɛŋa*] or [*ki*$^{\chi}$*λ·ɛŋa*][3] [*nuφ·i-*] or [*nu*$^{\chi}$*φ·iumaneq*][4] [*sis·aq*] or [*si*$^{\chi}$*s·aq*][5]

In [*nυ·*$^{\chi}$*s·uaq*], where *-s·uaq* means „large", the raising of

[1] house [2] grass [3] its boundary [4] (place-name at Eqe) [5] the beach.

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the back of the tongue (χ) is perhaps a rudiment of the final consonant of the root-word (*nʊ·k*, a promontory).

The word [*uφ·a*][1], which is used as a kind of interjection, has beside the form [*uˣφ·a*], also a form [*uχ·a*], where a sound-change has really taken place under the assimilating influence of the *u*.

This raising of the back of the tongue also occurs sometimes before long [*t·*]; I have noted: [*iˣt·uarpa·*] by the side of [*it·uarpa·*][2].

At Prövен in the Upernavik District, I heard *a* before *λ*, *k*, *n* palatalized in a similar manner, as in [*ajoŋ·ipäˣλ·a·rpɔq*][3] [*nä·(g)k·a*][4] [*ä(g)k·erqɔq*][5] [*qä(g)n·erpɔq*][6]. In these words, I paid special attention to the raising of the back of the tongue. Otherwise short *a* before a closed consonant (*k ŋ t n*) is throughout the whole of North Greenland so palatalized as to get a somewhat *ä*-like character, i. e. it is shoved forward. It is symbolized by [*ä*].

The transition-sound *w* (as exponent *w*, *o* or *u*) occurs very often between [*i*] and [*λ*] and also in certain words after *a* (especially after long *a*). It is in reality merely a labialization of the vowel and of the beginning of the following consonant (cf. § 11 and § 16), but in many cases it seems to be etymologically original in the words; in other cases, it is merely either an analogical formation or a reaction of the lip-muscles caused by the movements of the tongue and the jaws. It is found connected in a strange manner with the just mentioned velarization or postpalatalization between *i* and *λ* in the following examples chosen at random from the tales which I wrote down in Niarqornarssuk:

[1] there! [2] peers after something through the window-pane [3] it (he) is excellent [4] no [5] he is approaching [6] it is snowing.

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[$mi^{w}_{\chi}\lambda\cdot ia$][1] [$a^{w}_{\chi}\lambda\cdot amik$][2] [$ni^{w}_{\chi}\lambda\cdot \eta\cdot ilaq$][3] [$ki^{w}_{\chi}\lambda\cdot inera\cdot rsuk$][4]

In other words, every time the tongue had to touch the roof of the mouth in order to produce the λ-closure, it not only approached it at a single point, but a larger part of it was always raised in a mechanical manner. At the same time the lips as if with a reflex movement assumed a position which could be taken for a very slight labialization. But this mode of articulation, I think, is limited to certain districts or certain individuals.

When long *a* is diphthongized in the direction of *o* or *u* by a following consonant, there is sometimes an etymological foundation for it as in [$sona^{\cdot u}\varphi\cdot a$][5] $<$ $sona + u\varphi\cdot a$, sometimes not, as in [$a^{\cdot o}m\cdot a$][6] which I have occasionally heard instead of the usual [$a\cdot m\cdot a$].

This diphthongizing labialization of *a*, which would seem to be a very fleeting sound-element, may, however, in several cases, determine the meaning of a word.

[$na\cdot wɔq$] it is at an end, past	[$na^{\cdot u}wɔq$] it (the flower) is sprouting
[$awa\cdot$] the back part of his head	[$a^{\cdot u}wa\cdot$] his blood
[$qawa\cdot$] its south (side)	[$qa^{\cdot u}wa\cdot$] his forehead
[$sawa$] a sheep	[$sa^{\cdot u}wa\cdot$] 1) the mould on the roof of a Greenlandic house 2) strews it with mould.

It is by means of such labialization that the 1st per. sing. and plur. in certain forms are indicated, as in: [$atɔra^{w}k\cdot o$] when I used it, [$atɔri^{w}t\cdot ik$] I or we who use them, [$i\lambda\cdot u^{w}n\cdot e$] in my house.

This labialization is omitted, however, when there is no special reason for emphasizing the fact that it is the 1st person

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[1] table-cover, cover of skin [2] otherwise [3] he doesn't talk [4] (proper name) [5] what there! [6] also, again.

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that is considered. It seems to be the rudiment of a lip-consonant (*p*), which is no longer necessary, but which may still occasionally be introduced in this manner as an indication of some special shade of meaning in the word.

In other forms of the verb, the presence or absence of this labialization is of no significance for the meaning. At Jakobshavn, I heard an old woman (born 1828) say: [*pe·rsi-maωλune*] while her son repeated it as [*pe·rsimàλ·une*][1], and in both cases the reference was to the 3rd pers. sing. In the 3rd pers. plur., the same circumstance would surely be found.

Of the uncertainty in the choice of glide-sounds we have evidence in the four different forms which I have noted down for the 2nd pers. sing. of the word which most frequently occurs as [*iλ·it*][2], but also more or less occasionally as [*i·λit*][3], [*iʷλ·it*], [*iᵡλ·it*]. — The transition-sounds are more important for the meaning and more invariable in the two negative verbs [*niᵡλ·ɛɳ·ilaq*], it is not cold (to the touch etc.) < *nilak*, fresh water ice, and [*niʷλ·ɛɳ·ilaq*], he does not speak, does not let his voice (*nipe*)[4] be heard, yet both of these words coincide in careless pronunciation in the form [*niλ·ɛɳ·ilaq*], which has both meanings.

Labialization of *i* before the aspirated [*φ*] is found, for instance, in the word [*kiʷφ·aq*][5], before [*s·*] in [*iʷs·aq*][6]. On the whole, labialization both of *a* [*aʷ aʷ a·ʷ*] and short *i*, *u* seems to occur before the most heterogeneous consonants (*λ*, *φ*, *χ*, *ρ*, *t*, *n*, *ɳ*), but it (i. e. the glide-sound *w*) may be more or less distinct, so it is often difficult to decide if it is an original element in the word or if it is merely an occasional muscular contraction. In not a few cases, it is probable that it is etymologically a reduced *p* or *m*:

[1] after it had become loosened (*Iλ·*) [2] thou [3] thou (*Iλ·*) [4] (*p* in this word occurs in the form of labialization in the corresponding verb) [5] a worker, servant [6] the other day.

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[illegible] < *qupiwa·*[2], [*su*^{w}*λ·ɔq*][3] < *supiwa·*[4], [*u*^{w}*λ·ɔq*][5] < *uwa*[7], [*to*^{w}*q·it*][8] < *tupeq*[8], [*ti*^{w}*k·a*][9] < *tipeq*[9], [*si*^{w}*λ·eq*][10] < *sipiwa·*[11], [*si*^{w}*n·eq*][12] < ?**simiwa·*[13], [*sa·*^{w}*n·ip·ɔq*][14] < *su·*^{w}*neq*[15], [*sä*^{w}*s·ät*][16] < *sapiwa·*[17], [*pi*^{w}*λ·e*][18] [*pi*^{w}*φ·ik*][19] < *pe* + *-qik*, [*ni*^{w}*χ·o*][20] [*ni*^{w}*φik*][21] [*ni*^{w}*n·qa·*][22] < *nimeq*[23], [*ni*^{w}*λ·ikarpɔq*][24] < ?*nileq*[25] (cf. [*niχλ·eq*][26] < [*nilak*][27]) [*nä*^{w}*s·aq* or *nä*^{w}*ç·aq*][28] < *napiwa·*[29], [*me*^{w}*q·ua*][30] [*mä*^{w}*sarpa·*][31] < *mamip·ɔq*[32], [*ku*^{w}*λ·ɔq*][33] [*ki*^{w}*λ·ɔrpa·*][34] < *kipiwa·*[35], [*kä*^{w}*λ·ua*][36] [*qu*^{w}*λ·e·*][37] [*qi*^{w}*s·ap·ɔq*][38] < ?*qipiwa·*[39], [*qi*^{w}*n·eq*][40] < *qipiwa·*[39] [*qi*^{w}*λ·erpɔq*][41] [*qa*^{w}*η·uip·ɔq*][42] [*qä*^{w}*sit*][43] [*qä*^{w}*λ·una·q*][44] [*qä*^{w}*n·a*][45] < *qawa*[46] or < *qama*[47], [*qa*^{w}*s·ap·a·*][48] < *qaperpa·*[49], [*qä*^{w}*s·up·a·*][50] < *qamip·ɔq*[51], [*i*^{w}*n·aq*][52] [*i*^{w}*s·eq*][53] [*i*^{w}*s·ɔq*][54] [*i*^{w}*k·ik*][55] [*i*^{w}*λ·erpɔq*][56] [*i*^{w}*η·erpoq*][57] (Kl. < ?*im·erpɔq*[58]) [*a*^{w}*λ·ɔrpɔq*][59] [*a*^{w}*λ·a*][60] [*a*^{w}*q·ut*][61] [*a*^{w}*q·arpɔq*][62] [*a*^{w}*χ·ɔrpa·*][63] < [*awip·ɔq*][64], [*a·*^{o}*ρ·it*][65] < [*a·*^{w}*weq*][66], [*a·*^{w}*saq*][67] [*a·*^{w}*lawɔq*][68] [*a*^{w}*η·ɔ·q*][69] < *a·p*[70] + *-go·q*.

[1] cleft in a cliff [2] cleaves it [3] a tube-shaped depression [4] makes a draught for it through a narrow opening (draught of air or pressure of water) [5] day [6] through there [7] there! [8] also [*tɔrqit*], plur. of [*tupeq*], tent. [9] (its) smell [10] the middle line of the abdomen [11] rip something up, divide it [12] the surplus [13] cf. Kl. Ordb. p. 326 [14] gets a bone in the throat [15] bone [16] aquatic animals which come up in an opening in the ice where they are caught [17] to obstruct the passage in the water for them (fishes or birds) by surrounding them with kajaks [18] insane, mad [19] place where one does something [20] slime on fishes or sea-serpents [21] the peritoneum [22] is squeezed, is narrowed in by something [23] bond, string [24] rises to the surface, comes up in the water [25] air which streams out, fart [26] cold which is felt by touching [27] fresh-water-ice [28] half of an animal which is divided across the middle [29] breaks something in two [30] a bird's leg [31] effects the healing of a sore [32] has grown together, has closed (a sore, hole in the ice, foot-path etc.) [33] the thumb [34] shortens it several times [35] shortens it once [36] the bone mounting at the end of an oar [37] his tears [38] makes a sudden jerk in order to fling something away [39] twists something [40] twisting, thread of a screw [41] is bright, shines [42] snores [43] how many? [44] a European, foreigner [45] the one in the south; the one in there or out there [46] south [47] in there or out there (in relation to the house) [48] strip the skin off the blubber with a knife [49] scrapes something [50] extinguishes the light or the lamp for him [51] is extinguished, goes out (the fire) [52] a bluff [53] juice of meat, sap of plants [54] soil, mould, turf [55] gums. [56] keeps what is his in preservation [57] sings in the old heathen manner [58] (ditto) Kl. *ingmerpok* [59] strides, jumps over something [60] another [61] a way [62] is greedy [63] divides it into several parts, cuts it out [64] is separated in two parts [65] walruses [66] a walrus [67] summer [68] moves, totters, roves about [69] yes is said, say yes! [70] yes.

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The right to speak about the labialization of the vowel and of the first part of the following consonant in all of these words, instead of considering the exponent *w* as an independent sound that separates them, I assume on the ground that in common everyday conversation no such separation really takes place, indeed the *w*-element is in numerous cases quite absent; when it is present, it appears as a movement of the lips coincident with the articulation of the sound-group, and the two sounds, especially the vowel, are slightly modified, but not separated by it; it is but seldom that even a loose *w*-position is reached; but on the background of the more open vowel, even the slightest contraction of the lips sounds like a *w*-like reduction of the sonority.

Labialization of consonants, — i. e. with rounded lips from the beginning to the end of the articulation — seems to occur now and then with some variations from fjord to fjord. I found [*k*] labialized in the Upernavik Distrikt in words like [*ki*^{w}*k*^{w}aq][1], [*ki*^{w}*k*^{w}ar*λοηο*], usually [*ki*^{w}*k*·ar*λοηο*][2].

[*ρ*] I found labialized in the southern part of the district of Egedesminde, as in [*nɔ*^{ρ}*ρ*^{ρ}aq][3], [*ila*^{ρ}*ρ*^{ρ}*ä*·*λ*·*ät*·a·r*pɔq*][4], otherwise [*nɔρ*·aq, *il*ar*φ*·*ä*·*λ*·*ät*·a·r*pɔq*].

[*s*] I found occasionally labialized at Jakobshavn in [*s*^{w}ɔ·r̃*m*·*ak*·*o*][5] [*s*^{w}ɔ·*rməta*·^{w}*wa*][6]. In [*ajüs*·*üse*·][7], the rounding of the lips during the articulation of the *s*-sound seems to have no acoustic effect upon it.

In § 10 it was remarked that the extremely protruding position of the tongue at the articulation of the point-conso-

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[1] a worker, servant(?) [2] gnaws the meat off (a bone) [3] a reindeer calf (one year old) [4] he exaggerates [5] why these [6] what is the meaning of that [7] how bad it is.

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nants involved a kind of palatalization of the preceding vowel. This is of great significance for the vocalic colouring of the Eskimo language. The short sounds [*a*] and [*ʊ*] become [*ȧ*] and [*ʊ̇*], the long sounds [*a·*] and [*ʊ·*] are diphthongized, the former more strongly, the latter slightly; [*a·ᶦ*] or [*ȧ·ᶦ*] does not sound exactly like a diphthong because *a* retains its deep pitch until the last moment before the on-glide of the following consonant; the modification which *a* thereby undergoes lies on the way toward an *i*, but it often gets no farther than to *e* or *ä*, thus either [*ȧ·ᶦ*] or [*ȧ·e, ȧ·ä*], seldom [*ȧ·j*]. As a common symbol for all these glides I generally use [*a·ᶦ*], as in: [*tama·ᶦt*][1] [*aᶦt·a·ᶦt*][2] [*ilaᶦn·e*][3] [*tama·ᶦsa*][4] [*saᶦtut*][5]. The finer shades of this diphthongizing of *a* will be given in § 25. [*ʊ·*] is lightly palatalized and diphthongized in [*tʊʊs·ʊt*][6].

Besides there may everywhere be found examples of *a* and *u* which are lightly palatalized [*ȧ, ʊ̇*] by a following *t*, *n*, *λ* or *s*, as far as *a* is concerned, also by *k*, *ŋ* (and *m*, *p*?); even if I have written [*a*] or [*u*] in these cases and left the palatalization unindicated, still it must as a rule be understood.

Palatalized consonants (like those in Russian), I have not met with in Greenlandic.

I have yet to mention the uvular glide-sound which is caused by the uvularization of vowels, namely the one which after a short vowel introduces the stopped consonant *q*. I consider it to be identical with the voiced fricative *r*, as in: [eʳ*q*ˡe][7] [eʳ*q*·eʳ*q*·ɔ*q*][8], which I generally designate in a different manner, thus: [e*q*ˡ*e*] [er*q*er*q*ɔ*q*]. This glide-sound gets an independent value in the consonant-group [r*q*], which is no doubt merely a reduced [*q*·] (cf. § 14).

[1] whole, entirely (3 pers. sing.) [2] not until now [3] once (formerly) [4] all (3 pers. plur.) [5] place-name [6] a large needle used in covering kajaks (with skin). [7] corner, corner of the mouth [8] the little finger

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Uvularized lip-consonants I have noted down from the southern part of the district of Egedesminde for instance in:

[*is*ˈerφ^{o}ɳˈ*a·t*] with uvularized φ instead of the usual [*is*ˈerφɳ*a·t*][1] (cf. page 151).

With respect to the diffusion of nasalization, I think I may formulate the rule that a short vowel before a long nasal sound becomes nasalized; and that likewise final *e* after an *m* or *n* very often becomes nasalized, as in:

[*a·rim·e̯*][2] [*ata·ne̯*][3] [*ām·as·alik*][4].

An *r* followed by a nasal sound is always nasalized, indeed the nasalization often extends to the vowel preceding *r*, as in: [*a̰r̃n·ät*][5] or [*ār̃n·ät*].

The nasalization, however, I have generally left unindicated on account of the big difference between the individual speakers in this respect. Many words are only occasionally subjected to this influence.

§ 25. The influence exerted on vowels by neighboring consonants has been incidentally touched upon in § 12 and § 24.

The influence of consonants upon preceding vowels is seen in the following examples:

[a — *a* — *ä*] [ar*naq* — *arna·* — ar*nät*][6]

[a — *a* — *ȧ*] [*atɔrparput* — *atɔrpa·* — *atɔrpȧt*][7]

[*peq*ar*pɔq* — *peqȧŋ·ilaq*][8]

[*e* — *i* — *ɪ*] [*sule* — *sulilo*][9] [*puise* — *puisit*][10]

[*ise* — *isip* — *is·ipɔq* — *isɳa·*][11]

[e — *e* — *i*] [*ameq* — *ame·* — *am·ip* — *am·it*][12]

[ɔ — *o* — *u*] [*niaqɔq* — *niaqua*][13]

[*iλ·ɔrsuaq* — *iλ·o* — *iλ·up* — *iλ·uk* — *iλ·öt*][14].

[1] they went in to him. [2] (interjection) [3] beneath, underneath [4] (place-name) [5] women [6] a woman — his woman (mother) — women [7] we use it — he uses it — are they used [8] there is — there is not [9] yet — and yet [10] a seal — seals [11] eye — eye's — he gets (got) something in his eye — he is looking at him [12] a skin — his skins — skin's — skin [13] a head — his head, [14] a big house — a house — house's — two houses — houses.

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[ä] [ö] indicate such *a*- and *u*-sounds as are especially modified by closed consonants and point consonants. [ā] [ū] indicate sounds which are still more fronted. The shades of sound are not quite fixed, but vary somewhat according to districts and individuals. There are probably some etymological reasons to be found where there exists a difference of this kind between two words which are otherwise alike in form, as for instance between [*mas·a*][1] and [*täs·a*][2]; in the latter the shade *ä* is very marked; in Upernavik, it sounded almost like [*täᵗs·a, täɪs·a*].

[ö] [ü] seem to be especially frequent in the neighborhood of *s*'s and *j*'s. Between *s-n* and *s-j*, these shades always occur more or less distinctly.

i and *u*, especially when followed by *m*, *n*, *ŋ*, are apt to be changed to *ɪ* and *ʊ* or even to *e* and *o*. The Greenlandic [*ɪ*] and [*ʊ*] when followed by these consonants are usually nearer the pure *i*- and *u*-sounds than is the case in the corresponding sound-groups in French, German and English.

e and *o* have a tendency to change as soon as they no longer stand as the last sound in a word (as in *iλ·o uk·o*), when the word, for instance, is lengthened with a suffix. When followed by *a* or by *k*, *t*, *p*, *s* etc. (any consonant except a nasalized or uvular consonant), they approach or pass into *i* and *u*. They occur unchanged in the middle of words before *r* in short unstressed syllables (*neriwɔq, more·rsit, anore*); but between two *r*-sounds, they change in such syllables also (as in *-rɐr-*, *-rer-*, *-rɔr-*).

Before *q* (*ρ, ŋ*) and, in stressed syllables, before *r*, all the vowels suffer the oft mentioned metamorphosis i. e. uvularization. It can be measured by comparing Upernavik dialect forms

[1] here is —, this is —! [2] there is, that is the one!

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(*kutät·ut*-forms, cf. § 30) like [*unik*][1], [*υ·nik*][2] with the usual forms which have *q* instead of *k*: [*uneq*, *υ·neq*]. Likewise we find in normal West Greenlandic *neriwɔq*[3] < **neriwo* + *q* (ɔ < *o*), *nere*re·r-[4] < **nerire*·r- (e < *i*). The vowels which have thus been uvularized may be further influenced by a following *ŋ*, *n*, and also perhaps to a less degree by the other point consonants. Thereby [a] becomes [ȧ], [e] > [ḛ], [ɔ] > [ɔ̣]. Since a vowel followed by *rn*, *rm*, *rŋ*, *rɳ*, always is nasalized, this circumstance also gives it a peculiar shade*).

§ 26. Sound-groups. Two different consonants may not occur next to each other in the Greenlandic Eskimo language. A consonant must always be succeeded by a vowel before the next consonant comes. The only exceptions are: *ts* and *r* + consonant.

This characteristic reveals itself in a striking manner in the foreign, mostly Danish, loan-words adopted in the language, where all consonant-groups are split by the insertion of vowels, whose nature is determined so as to harmonize with the other vowels in the word:

Danish	skrå	=	Greenlandic	[*s|ukul'ɔ·q*]
»	spænde	=	»	[*sip'erneq*]
»	silke	=	»	[*si·like*]
»	præst	=	»	[*palase*]
»	trøje	=	»	[*tɔrυ·juk*]
English	pork	=	»	[*puluke*]

There are a few exceptions, as for instance [*pruφe·te*], a prophet, but they seem to be difficult for the Greenlanders to

*) "All nasalized vowels have a deeper natural pitch than the corresponding mouth-vowels, so that for instance a nasalized *a* has a darker more *o*-like shade." O. Bremer: Deutsche Phonetik, p. 161.

[1] the armpit [2] a burn [3] he is eating [4] has finished eating.

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pronounce and they sound foreign to the language. When two different consonants happen to meet in Greenlandic in the formation of suffix-compounds etc., they are completely assimilated, as will be shown in the next paragraph by examples. If it were possible to examine this language historically, it would surely be found that many, perhaps most, of the long consonants are assimilations of two different consonants.

There is only one consonant, the uvular fricative *r*, which can occur before most of the other consonants, but this sound is akin to the vowels, and in such groups it is rather connected with the vowel preceding, than with the consonant following it. It never follows directly after another consonant, but, like other consonants, it is often found isolated between two vowels.

With respect to vowel combinations, all pseudodiphthongs are very common, as:

[*ia*] [*io*] [*iu*] [*ɾa*] [*oa*] [*ʊa*] [*ua*] [*uɾ*] [*ui*].

Every page of an Eskimo text contains plenty of examples of these groups.

Proper diphthongs, as in German: mein, haus, häuser, in English: high, how, boy, in Danish: fej, hav, høj, do not occur in Greenlandic.

When *a* + another vowel occurs in Greenlandic in the formation of suffix-compounds or in declension, there occurs an assimilation whose first part consists of a long [*a*] or [*ȧ*] while the last part is a glide toward the other vowel (generally *i* or *u*), but the other vowel is not articulated. A mere suggestion of it appears at the close of the long open *a*-vowel. Beside the examples of such vowel assimilations which I have occasionally written down in my notes, I made direct experiments (with XI and XII), and I give here some of my phonetical transcriptions, although they but roughly reflect these fine shades of sound. They show clearly enough that all real

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diphthong-formations are difficult for the Greenlander to pronounce, and therefore they generally approach complete vowel-assimilation.

[*qajaq*] (< *qaiaq*?) > [*qaja·*] [1a] *a·* < *a* + *a* (his)
[*qaja·ɪ*] [1b] *a·ɪ* < *ȧ* + *e*, cf. *aloq*, *alue* (sole, his soles)

Assimilations of *a* + *i*.

- [*qȧ·ᵈn·e* or *qȧ·ᵉn·e*] [1c] [*qȧ·ᵗn·ak·a*] [1d]
- [*piniȧ·ᵗn·*ar*pɔq*] [2] < *pinia*(*q*) + *-in·*ar-
- [*ta·ᵃmȧ·ᵗt·umik*] [3] < *ta* (Relative prefix) + *ima* (thus) + *it·o*(*q*) (being) + *mik* (Instrumentalis)
- [*ta·ᵃmam·ȧt*] [4] < *ta* + *ima*(*m*) + *-mȧt* (verbal suffix)
- [*sa·ᵈt·ɔq* or *sa·ᵉt·ɔq*] [5] < *sa*(*k*) (front) + *it·ɔq* (being)

Assimilations *a* + *u*.

- [*ta·ᵈna*] [6] < *ta* + *una* (he, it)
- [*qaja·ᵈsaq*] [7] < *qaja*(*q*) + *usaq*
- [*nɪŋa·ᵓwa*] [8] < *niŋa·ɔ*(*q*) + *a* (his)
- [*pala·ᵓwɔq*] [9] < *pala*(*k*) + *uwɔq* (is).

Triphthongs or compound diphthongs are not unusual on account of the constant tendency of the language to pile up suffixes in the words. Ex.:

sikoiuit·ɔq [10] *nalunaiaiwɔq* [11] *qiwiaiautit* [12] *ʊ·wauarpɔq* [13] *auiauqajut·ut* [14] *ikiuiumas·ain·armat* [15].

But here too the difference between the single elements of these vowel-groups is in large part leveled just as in the case of the simpler diphthongs, the most sonorous elements becoming the most dominating ones in the group.

[1a] his kajak, [1b] his kajaks, [1c] his (suus) kajak, [1d] my kajaks [2] he captures game continually [3] thus [4] since the circumstances were such [5] (place-name) [6] *ta* + *una* (he), the one spoken of [7] resembling a kajak [8] his or her brother-in-law [9] that is splendid [10] eternal ice [11] he gives explanations, witnesses [12] a brush [13] it (the pot) contains too many pieces to be cooked [14] blood-robbers, i. e. murderers [15] because he always want to help ([14] and [15] from "Atuagagdliutit" 1900—1901, p. 7 and p. 168).

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§ 27. Both vocalic and consonantal assimilations occur in great numbers, especially on account of the suffixal character of the language.

It is necessary to make a few remarks here about the structure of the language.

Eskimo words are to a far greater extent than in most other languages inflected by means of suffixes. The suffixes may be either single sounds, or sound-groups resembling words in all others respects except that they cannot stand isolated. An independent word may have several such suffixes linked to it at once. This incessant interlinking of the word-elements gives rise to the conditions for the large number of assimilations which are found in the language, since on the one hand the final sounds of the independent words, on the other hand both the initial and the final sounds of the suffixes influence each other on being brought together and are forced to adapt themselves to each other according to the phonetical elasticity, or lack of elasticity, of the language.

What we find are partly examples of geminated vowels and consonants occuring in suffixed words exactly where one would expect two different sounds; partly examples of two vowels or two consonants, likewise occuring in the suffixal joints, which qualitatively approach each other nearer than one would have expected.

With respect to the geminated consonants, where it must be assumed that a final consonant in the first word and an initial consonant in the second have completely melted together into one long sound, it is often difficult to determine the exact character of the two original elements. Before passing over to those examples of various assimilations which I think I am able to substantiate, I shall give an illustration of the difficulties that may be encountered in such investigation.

Such a word as [*inus·iwɔq*] may with certainty be dissolved into three links: 1) the word which means "human being" and

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which when isolated in the nom. sing. has the form *inuk* 2) the suffix *-si-* (NB. short *s*), which means: one gets or comes across something 3) the verbal suffix of the 3rd pers. sing. ind. The whole means: one (or he) comes (or came) across people (one or several persons). How is the long *s*-sound in this word to be explained? We have an indication that the original first element of this sound was a consonant, most likely an unvoiced one just like the *s*-sound itself, but there is otherwise no indication as to the quality of this consonant. If the newly formed word only could mean: comes across a person (sing.), there would be some reason immediately to conclude that [*s*·] comes of *ks* (*inuk* + *si*). But the word also, and generally, means: comes across people (plural). The plural of *inuk*, however, usually has the form *inuit*, which in combination with *-si-* would result in another form than the one given. So the probability remains that [*s*·] really comes of *ks*, that it is the singular form to which the suffix has been added. Whether *k* has first passed through the intermediate form *g*, or has passed into *s* at one bound must, however, remain uncertain. — This same word-stem may occur in all the following forms according to the suffixes which are added to it: **inu*, **inʊ*, **inɔ*, **inom*, **inus*, *inuk* (the current base-form), also with inner change **in·ut*, **in·uφ*. All these forms are connected not only by similarity of sound but also by similarity of signification (human being: kills a h. b., is a h. b., catches sight of a h. b., catches a h. b., his fellow h. b., persons whom one visits on the way, etc. Cf. Kl. Dict. pp. 100—103).

This example is typical of them all, similar changes taking place when vowels are brought together as in the case of consonants.

The varieties of form of the independent word itself one might be tempted to ascribe to various kinds of assimilations, but they may also be due to the fact that some suffixes are added to the full form of the word, while others are added to

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its vocalic stem. Its inner changes (*in·u-* for *inu-*) will no doubt always be most difficult to explain.

The following is a series of cases which I think are certain. They stand as types of many similar cases — it would be impossible to give an exhaustive list of them all. Many suffixal assimilations have become so stereotyped that they are no longer felt as living sound-changes. Indeed it must be taken into account that there are many words in the language which are in reality originally suffix-formations, but can no longer be recognized as such, either because the suffixes have otherwise been lost to the language or because they have become such integral parts of the words that they can no longer be analyzed. In contrast to these words, there are others which are formed on the spur of the moment, as it were, by the Eskimo as he speaks. Also this kind of assimilations, which may be called spontaneous, take place in accordance with the basis of articulation of the language. It is not strange, however, if some of these fall out of the general plan and must be considered as rare or unique.

Since all Greenlandic Eskimo word-stems or words end either in a vowel or in one of the consonants *q k t p*, the first element of the assimilated mass of sound must always be either one of these sounds or a sound derived from one of them.

The reconstructed primitive forms are marked by an asterisk *; forms taken from the living language to show the completion of the assimilation are enclosed in brackets. Some few of the primitive forms are still used at random instead of the assimilated forms in certain parts of the country.

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Vocalic assimilations.

1. [*aa* > *a·*] **qajaa* > [*qaja·*] **takuwaa* > [*takuwa·*]
2. [*oa — ua*] [*iλ·oa — iλ·ua*] } doublets used at random
3. [*ea — ia*] [*amea — amia*] }
4. [*ee* > *e·*] **ikee* > [*ike·*]
5. [*ae* > *a·ᵈ*] **arnae* > [*arna·ᵈ*]
6. [*ai* > *a·ᵈ*] } samples, see § 26
7. [*au* > *a·ʷ*] }

8. [*ii* > *ᵈ·*] **iʷk·iip·ɔq* > [*iʷk·ᵈp·ɔq*]
9. [*ei* > *ᵈ·*] **peip·ɔq* > [*pᵈp·ɔq*]

10. [*uu* > *ʊ·*] **inuuwɔq* > [*inʊ·wɔq*]
11. [*ou* > *ʊ·*] **ɔrsɔ·uwɔq* > [*ɔrsʊ·wɔq*]
12. [*uau* > *ʊ·*] **-s·uauwɔq* > [*-s·ʊ·wɔq*] *-s·uaup* > [*sʊ·p*]
    **-η·uauwɔq* > [*η·ʊ.wɔq*] *-η·uaup* > [*ηʊ·p*]

13. [*awɔ* > *ɔ·*] *-s·awɔq* > [*-s·ɔ·q*]
14. [*awu* > *ʊ·*] *-s·awuηut* > [*s·ʊ·ηut*]
15. [*awi* > *ʊ·*] *-s·awise* > [*s·ʊ·se*]
16. [*awa* > *ua*, *uʷa*] *-s·awat* > [*s·uat*]

17. [*uju* > *ᵈ·u*] *sujua* > [*sᵈua*] *sujuλ·eq* > [*siuλ·eq*]
18. [*uja* > *ia*] *sujaneq* > [*sianeq*]
19. [*ajo* > *io*] *najɔrqut* > [*niɔrqut*] (Nqk.)
    najɔrqutis·ät > [*niɔrqutis·ät*] (Prȫv.)
    kanajɔq > [*kaniɔq*]

20. [*t·ᵉia* > *t·a·*] **o·m·an·ät·ᵉiame* > [*om·an·ät·a·me*]

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[1] *a* = his, its: kajak his; he sees it [2] house his [3] sealskin his [4] sore + *e* = his or their: sores his or their [5] mothers his [6] *-ip·ɔq*, is without, lacks: it lacks sharpness; is dull [9] he is without possessions, poor [10] *uwɔq*, is. he is a human being, lives, is born [11] it is blubber [12] is big, the big one's — is little. the little one's [13-16] future suffix in 3rd pers. sing., 1., 2., 3. pers. plur. [17] its foremost part, foremost [18] sound of metal, a bell [19] trading-articles; a sea-scorpion [20] place-name *O·m·an·ätsiaq* in the locative.

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Consonantal assimilations.

21. [*rn* > *r̃η*, *r̃ŋ*, *ŋ·*] [er*nutaq* > er*ηutaq*, er*ŋutaq*, *ẽŋ·utaq*]
[er*nɛ·*naq > er*ηɛ·*naq, *ẽrŋ·ɛ·naq*]

22. [*rm* > *ʷr̃η*, *ʷŋ·*] [er*museq* > *eʷrηuseq*, *ẽʷŋ·useq*]

23. [*qn* > *rn*, *ʳn·*] **miteq*n*iarpoq* > [*mit*er*n*i*arpɔq*]

24. [*qm* > *rm*, *ʳm·*] **uʷλ·ɔqme* > *uʷλ·ɔrme*]
(*) *qanɔqmak·o* > [*qanɔrmak·o*]
(*) *ukɪɔqmanᵓa* > [*ukɪɔrmana*]

25. [*ql* > *rλ*, *ʳλ·*] **atis*a*qlup·ɔq* > [*atis*ar*λup·ɔq*]

26. [*qs* > *rs*, *ʳs·*] **qimeqsiwɔq* > [*qim·*er*siwɔq*]

27. [*qt* > *rt*, *ʳt·*] **qajaqta·q* > [*qajarta·q*]

28. [*rt* > *t·*] **nukap·iaqtoqaq* > [*nukap·iät·oqaq*] (Rdb.)

29. [*qφ* > *rφ*, *ʳφ·*] **qɔ·qφik* > [*qɔ·rφik*]

30. [*qp* > *rp*, *ʳp·*] **kanɪɔqpɔq* > [*kanɪɔrpɔq*]

31. [*kq* > *rq*, *ʳq·*] *nu·k qaqɔrtɔq* > [*no·rqaqɔrtɔq*] (Iλ·.)

32. [*kη* > *η·*] **inukηɔrpɔq* > [*inuη·ɔrpɔq*]

33. [*ks* > *s·*] **inuksiwɔq* > [*inus·iwɔq*]

34. [*kt* > *t·*] **kamikta·q* > [*kamit·a·q*]

35. [*kl* > *λ·*] **kamiklɪɔrpɔq* > [*kamiλ·ɪɔrpɔq*]

36. [*kn* > *n·*] **takina·rpa·* > *takna·rpa·* > [*tan·a·rpa·*]

37. [*km* > *m·*] **kʊ·kmut* > [*kʊ·m·ut*]

38. [*kp* > *p·*] **inukpas·uit* > [*inup·ɑs·uit*] **kiakpɔq* > [*kiap·ɔq*]

39. [*ηk-*] [*ãη·kəla·rtut*] (Nqs.), not assimilated

40. [*ηn* > *n·*] (*) *aηina·rpa·* > **aηna·rpa·* > [*an·a·rpa·*]
**mɑuηnarpɔq* > [*mã·ʷn·arpɔq*]

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[31] grandchild; immediately [32] a bottle [33] he hunts eider-ducks (*miteq*) [34] today (locat. of *uʷλɔq*); how these; this year [35] he has poor clothing [36] he has bought a dog (*qim·eq*) [17] kajak new [38] bachelor old [39] urine-place [30] he catches sea scorpions (*kanioq*) [31] point of land white, the white point of land [32] human being becomes, he is born [33] human being is met, one meets a human being or several [34] boot new [35] boot makes, he makes boot or boots [36] finds it long beyond expectation, or makes it too long [37] to the river (*ko·k*) [38] people-many, a crowd of people. It is warmth (*kiak*), is warm. [39] (a game) [40] he finds it big (*aŋe-*) beyond expection; he comes hither (*maʷŋa*).

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41. $[\eta l > \lambda\cdot]$ $*a\eta iliwɔq > *a\eta liwɔq > [a\lambda\cdot iwɔq]$ cf. p. 171

42. $[tn > n\cdot]$ $*sumutnarpit > [sumun\cdot arpit]$

43. $[tm > m\cdot]$ $*atmut > [am\cdot ut]$ $*kis\cdot ars\cdot\upsilon\cdot tmik > [kis\cdot ar\text{-}s\upsilon\cdot m\cdot ik]$

44. $[tk > k\cdot]$

45. $[tp > p\cdot]$

46. $[ts > t\cdot, t^{s}]$ $\left\{\begin{matrix} *nujsup\cdot a\cdot \\ *nuksup\cdot a\cdot \end{matrix}\right\}? > nutsup\cdot a\cdot > [nut^{s}up\cdot a\cdot]$ (cf. Kl. vocab. p. 258)

47. $[tl > \lambda\cdot]$ $*iw\lambda itlo > [i^{w}\lambda\cdot i\lambda\cdot o]$ $*s\upsilon\cdot tle > [s\upsilon\cdot\lambda\cdot e]$

48. $[mn > {}^{w}n\cdot]$ $*samna > [sa^{w}n\cdot a]$

49. $[p\eta > {}^{w}\eta]$ $*ki\eta it\cdot up\eta ɔ\cdot q$ $sa\cdot ne > [k\imath\eta it\cdot u\eta\cdot ɔ\cdot q$ $sa\cdot ne]$
$*a\cdot p\eta ɔ\cdot q > [a\cdot{}^{w}\eta\cdot ɔ\cdot q]$

50. $[pn > {}^{w}n\cdot]$
51. $[pq, pk > {}^{w}q\cdot, {}^{w}k\cdot]$
52. $[pl, pt > {}^{w}\lambda\cdot, {}^{w}t\cdot]$
53. $[ps > {}^{w}s\cdot]$

} samples, see p. 150

ad. 17—19. These examples do not really belong here, since the assimilations which they show are not due to suffixing. They are doublets which are used at random, although the shorter assimilated forms are most frequent. *-u* before *j* becomes [*ù*] or [*i*]. Yet *qùjawɔq* (he thanks) never becomes *qiawɔq*, which would give a totally different signification (he weeps). But Egede wrote *qyavoq* [*qüawɔq*] (= he thanks).

ad 21—22. Double forms, used at random, though in North Greenland the assimilated forms are most frequent.

ad 23—30. The assimilation by which *q* becomes *r* before a consonant is one of the most fundamental sound-changes of the language. As formerly mentioned (§ 14), it also affects the

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[41] becomes more and more big (**aŋe*), grows [42] whither are you going [43] downward (*at* in casus terminalis); stove (in the instrumental) [46] jerks it to himself in little forcible jerks. [47] and (*-lo*) you, but (*le*) which [48] [*sa^{w}na*] he in the west. [49] *Kiŋit·ɔq*, it is related, on its front side i. e.: in front of *K.*, it is related; yes, it is said.

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preceding vowel, which becomes uvularized. *-aqt-* becomes properly [-a$^{r}t\cdot$].

The phenomenon quite corresponds to the assimilation of the labial + consonant, which occurs in a number of words: *wq*, *wŋ*, *wg*, *wk*, *wn*, *wλ*, *wt*, *ws*, *wφ*. Here too the labialization affects the preceding vowel at the same time as the following consonant is geminated. *-awt-* becomes [-*ä*$^{w}t\cdot$] etc.

In the case of [*wq*], either *w* gets the upper hand as in [*a*$^{w}q\cdot ut$][1], or *q* as in [a$^{r}q\cdot ut$][1], the uvularization thus making its way through the *w*.

[*wg*] in *awgɔrλoŋo* becomes *χ·*: [*a*$^{w}\chi\cdot$ɔ*ρλoŋo*][2] or [*aχ·*ɔ*ρλoŋo*]. In all cases, the labialization is easily lost in careless enunciation, so that the consonant-groups under consideration simply become [*q· ŋ· χ· k· n· λ· t· s· φ·*] instead of [$^{w}q\cdot$ $^{w}\eta\cdot$ $^{w}\chi\cdot$] etc.

As more uncertain examples of assimilation the following may be mentioned:

The long initial consonants in the suffixes [*ŋ·uaq*][3] and [*-s·uaq*][4] may be best explained as original assimilations with the final consonant of the independent word.

The suffix *ŋ·uaq* is not affixed to consonant stems in the present language, but penetrates into the word up to the last vowel: *qim·eq*[5] becomes *qim·iŋ·uaq*[6]. It is a question if we have to do with an assimilation here [er*ŋ*] > [*ŋ·*].

More plausible is the assimilation **qisukŋuaq* > [*qisoŋ·uaq*][7]. *-s·uaq* would together with *qisuk* give [*qisus·uaq*], with *qim·eq*, [*qim·ers·uaq*]. So the combination *rs* can be better endured than *rŋ*.

aput[8], *aŋut*[9] with the addition of the suffix *s·uaq* become [*apus·uaq*] [*aŋus·uaq*]. But perhaps *s·* has come from *ks* rather than from *ts*, which at present either does not undergo any change or else (especially in North Greenland) passes into *t·*.

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[1] a way [2] parting it in several pieces, cutting it out. [3] little [4] big [5] a dog [6] a little dog [7] a little piece of wood. [8] snow on the ground [9] man.

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In these last words, then, *s·* could be explained as an analogical formation which had supplanted the original *-ts*. But who knows if *ts* did not become *s·* in past times?

Now it seems as if, in certain cases, a svarabhakti *i* may develop between adjoining *t* and *t*, *s*, *ŋ* etc. Thus *aŋut* + *ŋ·uaq* becomes *aŋutiŋ·uaq*[1]; *aŋut* + *siaq*, *aŋutisiaq*[2]; *aǧiut* + *siaq*, *aǧiutisiaq*[3]; *aŋut* in the plural, *aŋutit*. Here there may be some doubt as to whether the suffix is joined to the *t*-stem, or to an older form of the word which ended in *-te* or *-teq* (*aŋuteq* etc.).

Why do *qaq·aq*, *sanasɔq* etc. together with the suffix *-kut* give *qaq·ak·ut*[5], *sanasuk·ut*[6]? It is possible that we here have the assimilation *qk* > *k·*, cf. the assimilation *qŋ* > *ŋ·*, just mentioned. This parallel is not least interesting because in both cases the uvularization altogether disappears without leaving any trace in the preceding vowel — quite contrary to custom; otherwise *q* becomes *r* before another consonant. But so much is certain, that the sound-combination *rk* never occurs (whereas *rŋ* is frequent). If, however, *k·* and *ŋ·*, which are invariable initial sounds in these suffixes, cannot be considered as assimilations of the sounds mentioned, they may have found their way into the words ending in *q* by the analogy of other words in the language which end in *k* and *t* (*kk* > *k*, *tk* > *k·*, *kŋ* > *ŋ·*, *tŋ* > *ŋ·*, regularly). These last words are, to be sure, far fewer now-a-days than those ending in *q*, apart from the fact that a number of words do not end in a consonant at all in the current base-form (*iλ·o*[6] etc.). But there may have been other conditions formerly. It is also possible that both causes may have been at work; the analogy of the assimilation in the words ending in *-k* and *-t* may have supported the assimilation in the words ending in *q*.

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[1] a little man [2] a foster-father [3] a purchased file [4] through or over the mountain [5] the carpenter's, the carpenter with his family [6] a house.

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There are several suffixes which invariably begin with a long consonant: [*-s·ɔ·q*][1] [*s·aq*] or [*ç·aq*][2] [*-k·up·a·*][3] [*-m·ersɔrpɔq*][4] [*-η·erpɔq*][5] [*-η·ilaq*][6] [*-η·ɔrpɔq*][7] [*λ·arpɔq*][8] [*-tsiaq*][9] etc.

When these suffixes are joined to words ending in *-q*, this sound disappears without leaving any trace, as it seems. I am, however, inclined to think that here too the long consonant is originally geminated, the two elements being the final consonant of the word and the initial consonant of the suffix. The consonant of the suffix was originally short; no suffix is created with a long initial consonant. By destructive analogy or through far advanced assimilation, the uvular has been lost in those words where the suffix would give us reason to expect that it had once been present.

Exactly the contrary is the case with a series of suffixes which drag the uvularization with them even to vowel stems and to the words ending in *k* and *t*. The formation [*aserɔr-qajaqa·ra*][10] seems natural, where *-qajaqa·ra* joined to *aseroq* occasions the sound combination *rq*. But what is the origin of the same sound-combination in [*takɔrqajaqa·ra*][11] where the word-stem itself otherwise appears only in the form *tako-*? Here the uvularization must have come from the *q*-stem by productive analogy. These suffixes are in Kleinschmidt's dictionary (pp. 442—445) given as invariably beginning with *r*: *rq* (< *qq*), *rλ*, *rn*, *rp*, *rr* etc.

Finally some general remarks. It must needs almost always remain problematical, what a word's stem-form — the explanatory intermediate form between two related words — has looked like, as long as there are no historical documents to be had, or at least evidence from other dialects. A long *t* may in general just as well go back to *pt* or *kt* as to *tt*, a

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[1] verbal future suffix [2] nominal future suffix [3] consider him or it to be - [4] long (verbal) [5] is crazy after - [6] not [7] becomes -, becomes a - [8] verbal intensive suffix (with might and main etc.) [9] tolerably (little, big, or much) [10] I almost broke it to pieces [11] I almost saw it or him.

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long *n* just as well to *kn*, *tn* as to *nn*, etc.*) As a rule it must be decided in each case separately which is the most probable stem-form. The reconstructed intermediate forms are mainly scientific working formulas, in which the result of the analysis of the word is expressed, but they do not necessarily mean that the unassimilated forms ever were really pronounced. Perhaps the second *k*-sound in **kamikta·q* has never been pronounced as *k* directly before *t*, but has merely been thought, merely approximately aimed at. The result may have been a marked elevation of the back of the tongue before the *t*-sound, somewhat like a loosely articulated unvoiced *q*, in which the *t*-position has been anticipated.

It would be exaggeration to assert that all the geminated consonants in the language are eqvivalents for original groups of two different consonants, but such geminations are undoubtedly more numerous than those which can now be dissolved. The assimilating activity has no doubt been of no less importance in older stages of the language than is the case now. My notes and the tales etc. which I have written down contain enough of examples to show that assimilation is constantly taking place in the spoken language, in all essentials similarly for all who speak the language because they all have the same habits of pronunciation, and yet in many little details varying according to different individuals on account of individual arbitrariness. As contrasted with the assimilations handed down by tradition, which belong to the history of the language, these cases last referred to appear as vigorous demonstrations of the present life of the language.

*) Just as we should not be able to know anything certain about the original elements of the long *λ·* in words like *arnäλ·o*, *inuλ·o* (and the women, and the human being), if we could not take into consideration such suffixings as *unalo* (and he) etc. and conclude from the latter that in the former cases too the suffix is merely *-lo*, which in the first word is added to *arnät* (woman), in the second, to *inuk* (a human being); *λ·* has accordingly in the one case originated from *tl*, in the other, from *kl*.

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The adaptability of the sounds is first and foremost due to the fact that the words and the suffixes are firm in body.

In the Eskimo language, when the sounds are added together, the sum of two short sounds is either a heterogeneous group or a homogeneous long sound. The quality may change, but the quantity is retained. The language guards these long sounds conservatively.

§ 28. A sound may have been present to the consciousness for just a moment without being articulated. Both the speaker and the hearer understood it. Some few of these occasional omissions are repeated so often that they become firmly established. *atsip pa·*, the hole for the sleeve, becomes *atsipa*, the hole-for-the-sleeve (Kl. dictionary p. 12[2]); *piŋiĝit* becomes *piŋ·t*[1]. From my notes (the tales), I have collected the following more occasional examples:

	occasional forms	normal forms
[*ea* < *ipa*]	[*arnale a·sit*]	< *Arnalip* (or *-λ·ip*) *a·sit*[2]
[*a·* < *ai*]	[*qɑŋa·n·*arminik]	< *qiŋain·*arminik[3]
[*us* < *oqs*]	[*aŋakusäλ·uwɔq*]	< *aŋak·oq säλ·uwɔq*[4]
[*ui* < *upi*]	[*iλ·u ilua*]	< *iλ·up ilua*[5]
[*am* < *atm*]	[*me·rqa marλuk*]	< *me·rqat marλuk*[6]
[*ti* < *tai*]	[*as·a"t ina·*]	< *as·a"ta ina·*[7]
[*ksj* < *kisi*]	[*ksjän·e*]	< *kisiän·e*[8]

Some of the most extreme cases I know of such slips of the tongue are the not unfrequent

[*pu·likɔrsua*] < *pulukip* ɔrsua[9]

[*k·ɪ·s··ɔq*] < *kiwis.isɔq*[10]

[*no·ŋ·iλät*] < *noŋoŋ·iλ·at*[11]

[1] 2. pers. sing. opt. of *piŋaoq*, is owned(?) cf. Rasm. Gr. § 34 (p. 56) [2] Arnalik (name), as usual [3] only with his nostrils [4] the angakoq lies [5] the interior of the house [6] two children [7] his finger's resting-place (i. e. the place and the hollow thus caused, where he laid his finger) [8] but, on the other hand [9] blubber of a swine, pork [10] one diving down (especially: seal) [11] they are not consumed, eaten up.

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A loss of sound which, in North Greenland at least, has become established is that which occurs in the inflection of the suffix *-t·ᵘiaq*, which in the plural becomes *t·a·ᵗt* instead of *t·ᵘia·ᵗt*, in the locative *t·a·me* instead of *t·ᵘiarme* (*O·m·an·ät·a·me*, in *O·m·an·ät·ᵘiaq*).

Also the reverse may take place, that is, new sounds may arise as strengthened glides between two sounds which are difficult to articulate rapidly in succession, and which themselves could neither be changed nor omitted without affecting the intelligibility of the word. Cf. § 24. Ex.:

[*ua — uwe*] [*uaŋa — uwaŋa*][1] [*qilaluaq — qilaluwaq*][2]
[*ui — uwi*] [*uiarpa· — uwiarpa·*][3] [*aŋuiaq — aŋuwiqaq*][4]
[*io — ijo*] [*tuawiɔrpɔq — tuwawijɔrpɔq*][5]
[*ia — iga*] [*aŋuiaq — aŋuwigaq*][4]
[*io — igo*] [*niɔq — nigɔq*][6] (Omnq.)

All of these forms are to be heard, and it may be difficult to decide whether the fullest or the most contracted ones are the most original; the difference between them is at all events insignificant, for *w* and *g* are very loosely articulated.

On comparing the forms of the same word in various dialects, we often find differences which indicate sound-reductions similar to those here mentioned.

[*awa — ua*]	W. Greenl.	*pawaŋ·a*[7]	E. Greenl.	*puaŋ·a*[7]
[*iwi — i·*]	"	*niwiarsiaq*[8]	"	*ni·jarsiaq*[8]
[*i·na — i·a*]	"	*ki·naq*[9]	"	*ki·aq*[9]
[*aku — au*]	Greenl.	*maujup·ɔq*[10]	Labr.	*makujup·ɔq*[10]
[*uwu — u·*]	"	*nu·k*[11]	"	*nuwuk*[11]

[1] I [2] a kind of whale (delphinus leukas) [3] he goes around it [4] a spear to kill harpooned seals with [5] hasten, hurry [6] a leg [7] from the south-east or from up there [8] unmarried woman [9] face [10] is fastidious, is disgusted with something [11] a point of land.

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When two syllables in succession are quite or almost alike, one of them is apt to be omitted in hasty articulation, so that the one that remains behind must stand for them both (haplology). I have noted down the following examples (which are in part very common):

qiaqinak[1] > *qian'ak* (Nqs.)
ikitsisit[2] > *ikit·sit* (Upern.)
aniniarpit[3] > *aniarpit*, *an·iarpit*
usiserpa·[4] > *us·erpa·* (Nqs.)
kanernermik[5] > *kanerm·ik* (Rdb.)

The examples which have been given of the phonetical changes which take place in the present, living language serve to throw light upon the original development of a number of word-formations in the language; they fall into groups according to the different ways they seem to have followed.

I. By pure haplology, [$u^w\lambda\cdot iwɔq$] (to spend or remain a day or several days at a place) seems to have originated from a form *$u^w\lambda\cdot uliwɔq$, which would be regularly derived from [$u^w\lambda\cdot ɔq$], a day.

II. A word of originally three or more syllables has — perhaps through a shifting of stress — lost the vowel in the second syllable, whereby two consonants have come to stand next to each other, and they have then become assimilated. These consonantal assimilations agree perfectly with those previously shown, which is a further support for the correctness of the hypothetical intermediate forms.

The relationship between the following words in Greenlandic, I base upon the hypothetical forms which I have given as intermediate between them: (to the left, the current word

[1] stop crying! (said to a little child) [2] matches [3] are you going out? [4] he loads the ship [5] (on account) of dew or hoar frost.

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Present forms		Regularly constructed forms	Present forms	
17. [*kiwiwa·*]	sinks it down (under the water)	> **kiwisaq*—[*ws*] > *?ki^{w}s·aq*	> [*kis'aq*]	an anchor or what is used for an anchor (stone etc.)
18. [*ka·wip·ɔq*]	turns round, spins round	> **ka·wis·aq*—[*ws*]	> [*ka·^{w}s·a·q*]	whirlwind, whirlpool

The intermediate forms in no. 11 and no. 14 are still used as regular participial forms. The other intermediate forms are regularly constructed, but only the corresponding assimilated forms are used at present.

A number — perhaps the majority — of the labialized consonants (*^{w}k*, *^{w}t* etc.) occurring in the language have no doubt originated after the analogy of the cases given here. We catch a glimpse, as it were, of a general phonetical change, which is perhaps not yet completed.

The same may be said of the following series of phenomena.

III. A fricative (*r*, *q*, *s*, *w*) between two similar vowels is apt to disappear completely, so that the vowels are assimilated (cf. the previously cited *nuwuk—nv·k*):

Present forms		Constructed forms	Present forms	
29. [*nuniäp·ɔq*]	gathers berries	> **nuniaqak·a*—[*aa*]	> [*nunia·k·a*]	my gathered berries
20. [*piläp·a·*]	cuts it apart	> **pilaqaq*—[*aa*]	> [*pila·q*]	that which is cut asunder
21. [*nis·a·p·ɔq*]	disgorges the food which has been swallowed, belches	> **nis·a·qaq*—[*aa*]	> [*nis·a·q*]	that which is disgorged
22. [*minarpɔq*]	keep some of the food until one comes home; take some of the food with one home	> **minaqaq*—[*aa*]	> [*mina·q*]	that which one has taken along home
23. [*na·sarpa*]	works to end something	> **na·saqaq*—[*aa*]	> [*na·sa·q*]	an omen of disaster, especially an omen of death

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awa·q[1] *a·ta·q*[2] *arλa·q*[3] *an·ora·q*[4] *aja·q*[5] *aλ·una·q*[6] *kɳua·q*[7] (cf. *kiɳuarpɔq*[8]) *qila·q*[9] (cf. *qilâk*[10]) *qarsa·q*[11] *sa·q*[12] *a·q*[13] *niuta·q*[14] (cf. *niutak*[15]) *qalipa·q*[16] (cf. *qalipak*[17]) *ate·q*[18] (cf. *ateq*[19]) *aχλ·atɔ·q*[20] *niutɔ·q*[21] *nipitɔ·q*[22] *niaqɔrtɔ·q*[23] *neρ·ersɔ·q*[24] *ma·ᵘjɔ·q*[25] *sɔ·q*[26]

-tɔ·q in [19—24] is connected with the verbal *-tuwoq* (is to superfluity, is big or has big -, many -). But it is not regularly formed as a participle (regularly *tusoq*, > *ʔtɔ·q*).

§ 29. Sound-changes within the West-Greenlandic language, proved by comparison of doublets, different inflectional forms of the same word, and different derivative forms of the same stem.

As contrasted with the dialect forms, the forms here given must be considered as general varieties within one and the same language-group (West-Greenlandic). They show sound-changes which may most appropriately be placed side by side with the assimilations. The vowel changes first given, which are enclosed in brackets, occur in the final vowel of the stem when a suffix is added.

Just as in the case of separation into dialects, it must be presumed that these established sound-changes have taken place at different times, and that their origin is due to individual

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[1] the back of the head [2] a harp-seal (phoca groenl.) [4] a woman's afterbirth [4] a Greenlandic hooded cloak [5] the cross-beam in a kajak by which the side-laths are held from each other [6] a strap, cord [7] a descendant, offspring [8] remains behind, comes later [9] the palate; the ceiling of a room [10] the sky [11] a loon (bird) [12] the front piece (the breast) of a garment [13] a sleeve [14] the stem piece and stern piece (at the ends of the keel) of a kajak [15] ditto, of a boat, a ship [16] an overcoat of reindeer-skin [17] a covering skin (egg-shell, seed-shell etc.) [18] a namesake [19] a name [20] a seal of 2—3 years (blue-side) [21] a long-legged one (especially a kind of spider) [22] one with a strong voice [23] one with a big head (especially a golden-eye) [24] one who is accustomed to eat too much [25] an unknown fabulous animal [26] why.

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differences. Some strike root, others are forgotten. The most vigorous ones affect the whole language.

[*a*—*i*]

1. *a·ᵘsaq*[1] — *a·ᵘsiwik*[2]
2. *uperna·q*[3] — *uperniwik*[4] with the exception of the colony *Upernawik* } the suffix is *-wik*
3. *iλ·uwta*[5] — *iλ·uwtɛɳut*[6]
4. *ernɛrata*[7] — *ernɛratɛɳut*[8] } the suffix is *-ɳut*

ad 3—4. Regularly formed Vialis. Thus in the case of all words with this form of inflection.

[*u*—*i*]

5. *aput*[9] — *apiwɔq*[10]
6. *neru|k·aq*[11] — *neriwɔq*[12]
7. *ernu|taq*[13] — *erniwɔq*[14]
8. *iɡu|naq*[15] — *iɡiwɔq*[16] (Kl. dictionary p. 74)
9. *iku|mawɔq*[17] — *ikip·a·*[18]

} the suffix is *-wɔq*

The following double forms (with *u*—*i*) are, as it appears from Kl. dict., used at random (or the *i*-forms at Upernavik, the *u*-forms in Middle Greenland?):

10. *kaluwsarpɔq*[19] — *kaliwsarpɔq*[19]
11. *iɳumip·a·*[20] — *iɳimip·a·*[20]
12. *isuɳ·awɔq*[21] — *isiɳ·awɔq*[21]
13. *isuwterpa·*[22] — *isiwterpa·*[22]
14. *qap·uarpɔq*[23] — *qap·iɔrpɔq*[23]

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[1] summer [2] "summer-place", a place for camping in tents in the summer [3] spring or summer [4] "spring-place" or "summer-place" [5] our house's or our houses' [6] through our house or our houses [7] his or their son's [8] through his or their son [9] snow on the ground [10] is covered with snow [11] eats [12] the ruminant's (the reindeer's) first stomach (paunch) [13] gives or has given birth to a child [14] grandchild [15] secretes matter (as for instance a sore) [16] sour train-oil [17] is on fire, burns [18] sets it on fire [19] stretches himself, pulls something in order to advance [20] separates it, takes it apart [21] is stretched straight out [22] unfolds or stretches it out [23] foams, froths; chatters incessantly.

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[q — r] between two vowels

15. *qanɔq*[1] — *qanɔrip·a*[2], *qanɔrun·a*[3], *qanora·*[4]
[2]) the suffix is *-ip·a*

16. *sɔ·q*[5] — *sɔ·runa*[6] the suffix is *-una*

17. *erneq*[7] — *ernɛra*[8], *ernɛrit*[8] the suffix is *-a*, *-it*

18. *nɛqe*[9] — *nɛriwɔq*[10] the suffix is *-wɔq*

[q — k]

19. *nuerλɔq*[11] — *nuerλuk*[11] (Kl. vocab. p. 256)

20. *sa·rλɔq*[12] — *sa·rλuk*[12]

21. *qɔ·q*[13] — *ʔkʊ·k*[14]

[χ — φ]

22. *siχ·ɔrpa·*[15] — *siφ·ɔrpa·*[15] } used at random
23. *tiχ·uarpa·*[16] — *tiφ·uarpa·*[16] }

[k — η]

24. *kiλ·ik*[17] — *kiλɛŋa, kiλ·ɛŋit*[18] }
25. *as·ik*[19] — *as·ɛŋa, as·ɛŋit*[20] } the suffixes are *-a*, *-it*
26. *up·ik*[21] — *up·ɛŋit*[22] }

[t — n]

27. *sʊ·t*[23] — *sʊ·nuk·o*[24] } the suffix is *-uk·o*
28. *kɛt*[25] — *kɛ·nuk·o*[26] }

[t — s] especially between two *i*s (cf. Rasmussen Gr. § 6[4–5]

29. *iλ·uatɛŋut*[27] — *iλ·uisɛŋut*[28]

30. *kamitit*[29] — *kamisit*[30]

31. *a·^{w}λ·a·^{i}t*[31] — *a·^{w}λ·a·^{i}sit*[32]

32. *-tip·a·*[33] — *-sip·a·*[33] (cf. Kl. Gr. § 139, note 2)

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[1] how [2] how is he or it? [3] how is it? [4] how (what) is said? (I beg your pardon!) [5] why? [6] certainly, yes [7] son [8] his son, sons [9] meat [10] eats [11] something which protrudes above or in front of something else (for instance a group of islands) [12] (a place-name) [13] urine [14] flowing water, river [15] wrings the water out of it (the clothes, the skin) [16] spits it out [17] limit [18] its limit, limits [19] image, portrait [20] his portrait, portraits [21] owl [22] owls [23] what (plur.) [24] what are they? [25] which? (about persons) [26] who (by name) are they? [27] through his or their house [28] through his or their houses [3-4] your boots (the two forms are used at random) [5-6] a gun, firearms (sing. and plur.) [7] verbal suffix (Causative).

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[*j* — *s*]

33. *kanajɔq*[1] — *kanas·ut*[2]

34. *kanisɔq*[1] — *kanis·ut*[2] or *kanisut*[2]

35. *pɴajuat*[3] — *pɴasut*[4]

36. *nujup·ut*[5] — *?nusup·a·*[6]

37. *-juip·ɔq*[7] — *-suip·ɔq*[7]

38. *-rujup·ɔq*[8] — *?-rusup·ɔq*[9]

39. *qarajaq*[10] — *qarasame*[11]

40. cf. also *nujaq*[12] — *nut·sät*[12], where, however, an extraneous sound seems to have come in and prevented the change of *j* to *s*.

Most of the sound-changes here given are confined to the words and forms mentioned. The change of *t* to *s* between *i*'s is very common; the change of *q* to *r* between vowels is — in North Greenland at least — a rule without exceptions. In South Greenland, *qanoq-ip·it*[13] may occur with the *q* kept.

Although these sound-changes are so complete that the different forms are now established in the language, yet in the living language there may still occur little deviations from the normal pronunciation, which may be considered as occasional sound-changes and which are no doubt designated as errors by "correct" speakers. Thus *k* may now and then be pronounced in the place of *t* (Kleinschmidt Gr. § 7: *pujortauk* instead of *pujortaut*[14]; *iχλ·υ·k* instead of *iχλ·υ·t*[15]); instead of the ending *-mit* (ablative) is sometimes heard *-mik* (instrumental). Almost normal are the changes $q > \eta$, $k > \eta$, $t > n$ when they occur as finals before a word beginning with a vowel:

[1-2] sea scorpion (sing. and plur.) [3] the third [4] three [5] they have moved (themselves) [6] moves it toward himself with a jerk, jerks it to himself [7] never [8] terribly [9] passionately, with lust [10-11] place-name in *O·m·an·aq* Fjord, in its base-form and in the locative [12] hair (sing. and plur.) [13] how are you? [14] a tobacco-pipe [15] a sling.

qanoq-ip·a > *qanoŋ-ip·a*[1]*). In my notes, there are many examples of these nasal changes.

§ 30. Like all other children, the little Eskimo children have difficulty in learning to talk plainly. I have unfortunately not taken many notes about the child-language, but yet I have a few, which are worth considering.

Thomas had just arrived at *Sermiarsuit* with his sledge on a visit to his brothers-in-law. While he was standing outside of the house waiting for some one to ask him in, he was practising hitting the dogs with his whip. When he hit one of them so that it howled loudly, he said: *kɾ·same niaqua an·ʇra·*, finally his head began to pain him! A little boy who had been looking on repeated his words, but he pronounced the last word: *an·ɳa·*. On another occasion, I heard a little fellow say: *putoqa·ɳa* instead of *putoqa·ra* (I got a hole made in it).

There are some Greenlanders who never learn to talk plainly. They are found here and there among the others, who call them *kutät·ut*, an expression which contemptuously classes them with little children who have not yet learned to talk plainly. There are certain sounds in the language which they cannot pronounce, or at least only with great difficulty. I think it is most frequently the women who, aside from the children, have these defects in pronunciation; they are more rarely found among men.

In a certain part of Greenland, this phenomenon is especially prominent, namely in the *Upernawik* District. I was told that there were Eskimo settlements north of the colony of

*) "wenn ein mit einem vocal anfangendes wort ohne pause drauf folgt, doch ist dies nicht durchgehende regel, sondern nur gewohnheit einzelner, besonders der weiber." Kl. Gr. § 5, cf. Paul Egede's Gr. Ch. I, 3—4.

[1] how is he?

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this name where there were only *kutät·ut*. The men at the colony and those farther south at Prövén whom I spoke with did not belong to this class, but there was an old woman at Upernawik whose language I tested according to my phonetical lists and whom I found to be in high degree *kutät·oq*; most of the examples of this kind of pronunciation given in the following survey are taken from her language.

The most characteristic feature is the difficulty in articulating with the innermost organs, which results in the substitution of *k* for *q* and the loss of the uvularization before a consonant. On the whole, all the back sounds are articulated farther front than is customary among those who speak correctly; the vowel *a* often sounds like [*äj*].

The *Upernawik* dialect exists alongside of these peculiarities, perhaps independent of them, perhaps partly influenced by them. At all events, the peculiarities which are characteristic of the *kutät·oq* language seem to belong to the Greenlandic child-language in general rather than to this special district*).

	Normal North Greenlandic	*kutät·oq* Greenlandic at *Upernawik*
[*q* > *k*]	[*qajaq*] [1]	[*kajäk*] [1]
	[*qʊn·eq*] [2]	[*kim·ik*] [2]
	[*qaq·ar**su**aq*] [3]	[*kak·a·**su**aq*] [3]
	[*qaᵘλ·un**ar**suit*] [4]	[*kä'tuna'**s**uit*] [4]

*) The native Eskimo "pastor" in *Upernawik*, Tobias Mörch, has very kindly taken the trouble to answer an inquiry which I made concerning *kutät·ut*, and I take the liberty of quoting his answer here: "All Greenlanders", he writes, "are not *kutät·ut*, but only a few. *kutät·ut* have been thus from childhood. Most of those who have been so while they were little are no longer thus when they are 9—10 years old, but some people are *kutät·ut* both when they are small and when they are grown-up. It is not only up here that there are *kutät·ut*; there are also such persons in *Oommannaq*'s District and at Egedesminde, as I have myself seen and heard".

[1] boat [2] dog [3] large mountain [4] the big Europeans.

	Normal North Greenlandic	*kutät·oq* Greenlandic at *Upernawik*
	[*qujanarsuaq*] [5]	[*kuja·nät^{t}·^{s}uaq*] [5]
	[*qiterqu^{w}λ·oηo*] [6]	[*kitik·u^{w}λ·oηo*] [6]
	[*arqiλ·oηo*] [7]	[*a·^{r}kiλ·oηo*] [7]
[*r* > *η*]	[*qanorip·it*] [8]	[*kanoηip·it*] [8]
	[*kat·orane*] [9]	[*ka^{t}s·oηane*] [9]
[ɔrs > *ʊ·s*]	[*isumatɔrsuit*] [10]	[*isumatʊ·suit*] [10]
[er*n* > *än*]	[er*niwɔq*] [11]	[*än·iwɔq*] [11]
	[*qern·ertɔq*] [12]	[*qän·ertɔq*] [12]
[ers > *äs*]	[ers*iwɔq*] [13]	[*äs·iwɔq*] [13]
	[erser*pɔq*] [14]	{ [*äs·erpɔq*] [14] or [*is.ɪ.pɔq, is·ip·ɔq*] ? [14]
	[per*serpɔq*] [15]	[*pä·s·erpɔq*] [15]
[ar*t* > *a·t*] [ar*p* > *a·p*]	[*oqartarput*] [16]	[*oka·t·a·put*] [16]
[ar*λ* > *ä^{i}λ·*]	[*mar λuk*] [17]	[*ma^{i}λ·uk*] [17]
[er*p* > *ä·p*]	[*pe·rpɔq*] [18]	[*pä·pɔq*] [18]
[er*m* > *ä·^{r}m*]	[*sermeq*] [19]	[*sä·meq*] [19]

[5] many thanks [6] parting it in the middle [7] arranging it, repairing it [8] how are you [9] soon [10] those who are very inventive [11] gives birth to; has given birth to [12] black [13] is afraid [14] appears, becomes visible [15] it is drifting [16] they are accustomed to say, speak [17] two [18] is away, has departed [19] inland ice.

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PHONETICAL DIFFERENTIATIONS

IN

THE ESKIMO DIALECTS,

A COMPARATIVE STUDY

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Abbreviations.

W Gr. = West Greenland between 74°—60° N. lat.
E Gr. = East Greenland between 66°—60° N. lat.
N Gr. = Northern part of Danish West Greenland.
M Gr. = Middle part of Danish West Greenland.
S Gr. = Southern part of Danish West Greenland.
Up Gr. = *Upernawik*, the northernmost colony on the west coast.
Amm. = *Ammassalik* (Angmagssalik), the Danish colony on the east coast.
C. York = the northeastern coast of Greenland north of Cape York along Smith Sound.
Bf. = Baffin Land[1]).
L. = Labrador[2]).
C. = Central Eskimo west of Hudson Bay[3]).
M. = the mouth of the Mackenzie River[4]).
N Al. = North Alaska, Point Barrow[5]).
NW Al. = Northwest Alaska[6]).
SW Al. = Southwest Alaska[7]).
Sib. = the northeastern coast of Siberia along Bering Strait[8]).

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[1]) F. Boas: Der Eskimo-Dialekt des Cumberland-Sundes (Mitteil. der Anthropol. Gesellschaft XXIV, Wien 1894). — Eskimo Tales and Songs (in Journal of American Folk-Lore vol. II (1889), vol. VII (1894), vol. X (1897)). — The central Eskimo (Sixth annual report of the Bureau of Ethnology to the secretary of the Smithsonian institution 1884—85, Washington 1889).

[2]) Erdmann: Wörterbuch (1864). — Bourquin: Grammatik der Eskimo Sprache (1891).

[3-4]) E. Petitot: Vocabulaire Français-Esquimau (1876).

[5]) P. H. Ray: Report of the Internat. Polar Expedition to Point Barrow (1885).

[6]) Wells and Kelly: Vocabularies (1890).

[7]) A. Schultze: Grammar and Vocabulary of the Eskimo Language of North-Western Alaska, Kuskoquim District (1894). — Francis Barnum: Grammatical Fundamentals of the Innuit Language (1901). — E. W. Nelson: The Eskimo about Bering Strait (1899).

[8]) Wells and Kelly: Vocabularies (1890).

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§ 31. Dialects in Greenland. The language which is spoken along the inhabited coasts of Greenland does not sound alike everywhere. The stock of words and the forms aimed at are chiefly the same, but phonetic differentiations have taken place from settlement to settlement, and have struck root sometimes over smaller, sometimes over larger areas. Even within the limited part of the west coast which I succeeded in traversing there were some very essential differences to be detected. For the rest of the inhabited coasts, we have merely some few meagre pioneer contributions to an investigation of this kind. A comparative examination of this material shows that there are at least 3 or 4 distinct dialects in Greenland and each one of these probably in turn falls into several dialectal subdivisions.

This circumstance may partly be explained by the natural boundaries existing between the various districts, which often cause all intercourse between the inhabitants of two neighboring districts to be broken off for a long period of time. But it is also possible that it may partly be explained by the fact that two or several immigrations have taken place from different tribes, each having its own dialect. There is some reason for giving the preference to this last explanation, if a comparison between the dialects shows that two groups which are now geographically separated have striking dialectal peculiarities in common; such an agreement would justify us in assuming the historical connection between the two language-groups, and accordingly also between the respective tribal groups, to have

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been closer than that general connection existing between all Eskimo. No doubt the Greenlandic Eskimo have in earlier times been more of a wandering people than they are now. Today they must be called a settled people. They keep to those fjords where they are most at home and to the districts where they are born. At certain seasons of the year and in certain places where the fishing or reindeer hunting is good, large numbers of people congregate from all sides, yet they never come from a greater distance than 70—80 miles, and they do not remain together longer than a month or six weeks.

The tribe at *Ammassalik* on the east coast is now quite isolated, since the Eskimo who dwelt farther south on the same coast have all moved over to the west coast*). But even before that time they do not seem to have had as much communication with their southern neighbors, as these neighbors had with each other or with the west coast**).

With respect to the inhabitants of Cape York (76°—78° 18′ N. lat.) they have not time out of mind had any communication with the other Greenlanders. The inhabitants of *Upernawik*, their nearest neighbors to the south, have never met people from up there, but have only occasionally seen their sledge-tracks without knowing where they came from. The people of Cape York have not, so far as is known, any tradition about their southern countrymen. But there have repeatedly come immigrants to them from some unknown tribe in, or south of, Ellesmere Land, whose language they say is somewhat different from their own (cf. Introduction p. 38)***).

*) Meddelelser om Grönland Vol. XXV, 1902 (G. Meldorf).

**) W. A. Graah's northernmost Greenlanders on the east coast at Omevik (about 64° 30′ N lat.) do not seem to have had the slightest idea that there were other Greenlanders living farther north on the same coast. Cf. Graah: Undersögelses-Reise til Östkysten af Grönland i Aarene 1828—31. Köbenhavn 1832, pag. 140.

***) Peary: Northwest over the Great Ice, 1898, pp. 406, 488. — Kroeber: The Eskimo of Smith Sound (1899) n. s., pp. 266—268.

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Also the southern Eskimo on the west coast, who are under Danish dominion, live in tolerably isolated groups, not only separated into Northerners and Southerners, but within each of these chief divisions, into small communities which are determined by the natural boundaries. The large ice-fjords cleft by the swift current, the long steep stretches of coast, where it is often impossible to find a single landing-place, the enormous masses of polar ice, which during most of the year shut out the whole east coast, and are by the current driven around Cape Farewell up along the west coast*) — all this makes it difficult and dangerous for them to undertake long voyages. Therefore the inhabitants of the different districts have but seldom any opportunity of meeting or talking with each other, and they rarely intermarry. At the colony of Holstensborg (66° 56′ N. lat.) the communication with the neighboring colonies is especially difficult on account of the long fjords where the current is very swift and through which the icebergs float from the inland ice to the sea. By this colony passes the dividing line between North and South Greenland, a division which also holds for such matters as the fact that the North Greenlanders drive dogs on the ice in the winter, whereas the South Greenlanders do not keep any dogs**) and do not travel very much on the ice. — Farther north again Disko Bay is separated from *Oommannaq* Fjord by a peninsula covered with wild mountains which extends out 45 miles from the main body of the land. *Oommannaq* is again separated from the northernmost colony *Upernawik* by a long steep coast-line, where it is difficult to find a landing-place

*) H. Rink: Danish Greenland (London 1877), pp. 73—74. — Grönland (1857) Vol. II, pp. 122—123. — G. Holm in "Meddelelser om Grönland" Vol. VI, pp. 181—190.

**) In 1885 the team of sledge-dogs farthest south were found at the trading-place *Sarfanguaq* (66° 50′) a little south of Holstensborg. Cf. "Meddelelser om Grönland", Vol. VIII, p. 40. — The inhabitants of *Ammassalik* on the east coast also use teams of dogs.

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and where the ice is uncertain in the winter. North of Upernawik similar conditions seem to prevail. Melville Bay has not yet been entirely explored, but at all events the northernmost inhabitants of *Upernawik* never come so far north. Such conditions must necessarily give rise to linguistic groupings or dialects.

Slight dialectic differentiations are indeed noticeable everywhere even within limited areas. In the region about Disko Bay, for instance, a man from Jakobshavn does not talk with the same accent as a man from Godhavn or one from Egedesminde. Around the *Oommannaq* Fjord, there is a difference between the language in its northeastern and in its southwestern corner.

One of the sharpest lines of linguistic division on the west coast seems to lie between the districts of *Oommannaq* and *Upernawik*, that is on both sides of Svartenhuk Peninsula at about 72° N. lat. When I came there from the south I met with a characteristic change in the stock of sounds, which seems to correspond to similar conditions on the east coast in the *Ammassalik* language. It is tempting to consider it more than accidental that there should be this phonetical conformity between two groups of languages so widely separated from each other, and to assume that there is a closer genetic connection between them than between either one of them and the other dialects in Greenland.

The following survey of the dialect forms from the various parts of Greenland, so far as I have been able to get information about them*), shows a series of sound-changes which all are in perfect agreement with the character of the language on

*) With respect to the South Greenlandic forms I am perfectly aware that many, perhaps most of them, are applicable only for a part of South Greenland. In reality we can no doubt here too distinguish between several dialects, although the distinguishing marks may only consist of some comparatively unimportant phonetical differences: but as to the nature of these differences and the boundaries between them, we have not yet sufficient information.

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the whole. The sound-changes are classified according to the principle that those are first treated whose place of articulation has remained fixed, thereupon those whose place of articulation has been moved. The consonant changes are given first, the vowel changes last. The sounds, as they are given for each single sound change, are arranged geographically, from north to south, and then east. — As for those forms which I myself have not had an opportunity to hear and thus to control, I can only hope that I have not misunderstood my authorities, when I have made use of their examples from the various dialects, and rewritten them in my phonetical transcription.

My sources for these forms are:

For the forms from North Greenland (the northern inspectoral division in Danish West Greenland, comprising the districts of *Upernawik*, *Oommannaq*, *Jakobshavn* and *Egedesminde*) my own direct notes.

For the forms from South Greenland older, written sources, among which I may especially mention S. Kleinschmidt's grammar and dictionary (South Greenlandic; takes up some few dialect forms without stating where they are used).

For the forms from Cape York (Smith Sound), the Eskimo Nikolai Broberg, with whom I traveled from Upernawik to Godhavn, and who a number of years earlier had come with an expedition ship (Proteus 1881?) to Cape York, where he had spent a year with *Sorqaq*. Also Dr. Stein's*) and Dr. Kroeber's**) investigations of the Eskimo at Smith Sound.

For the forms from *Ammassalik* an East Eskimo woman who had been brought home to Copenhagen in 1903—04 by Joh. Petersen, the colonial manager of that colony. They both gave me much information about the dialect there. Furthermore the missionary P. Rüttel who was in Copenhagen in the winter of 1902—03 and who both gave me oral information and placed at my disposal some transcriptions of the language which he had taken down in *Ammassalik*. Also Commodore G. Holm's copy of Kleinschmidt's dictionary in which he, with the help of Joh. Petersen and of the native schoolmaster Johannes Hansen wrote down a number of East Greenlandic words, especially from Ammassalik***).

*) In Petermanns Mitteilungen, Vol. 48, 1902.

**) Bulletin Amer. Mus. Natur. Hist. XII, 1899. Dr. Kroeber had the opportunity in New York in 1897—98 personally to examine six Eskimo from Smith Sound who had been brought home by Peary.

***) G. Holm: Den östgrönlandske Expedition, pp. 219 ff.

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Dialect differences

I. Consonantal differentiations with

ŋ (or *ŋ*?) final	W Gr. 76° N. lat. (C. York)		*timiaŋ* a bird
q final	W Gr. 72°—60° (N Gr., M Gr., S Gr.)		*timiaq*
ŋ or *r̃* final	E Gr. 65° N. lat. (Amm.)		*timiq* or *timiaŋ*
ŋ (or *ŋ*)	W Gr. 72°—71° N. lat. (Up., Omnq.)		*neŋiwoq* (or *neŋiwoq*)
r	W Gr. 69°—60° N. lat. (Jkh., M Gr., S Gr.)		*neriwoq* is eating
r, *r̃* or *g*	E Gr. 66° N. lat. (Amm.)		*negiwa·* he eats it
	mamaŋa·ra (or *mamaŋa·ra*)		*eŋina·* (or *eŋina·*)
	mamara·ra I find it very palatable		*erina·* his voice; melod
	mamar̃a·ra		—
ŋ or *g̃*	W Gr. 72°—66° (N Gr.)	*iŋa* a pot	*ajaŋaq* a kind of bilboquet
g	W Gr. 66°—60° 15′ S (Gr.)	*iga*	*ajagaq*
ŋ or *g̃*	E Gr. 66° (Amm.)	*iŋa* or *ig̃a*	*ajag̃aŋ*
	kiŋaŋ·aq south wind	*putuŋoq* the big toe	
	kigaŋ·aq	*putugoq*	
	—	—	
ŋ final	W Gr. 76° (C. York)	*marqoŋ* two	—
k final	W Gr. 72°—60°	*marλuk*	*nu·k* a point of land
k or *ŋ* final	E Gr. 66° (Amm.)	*martik*	*nu·ŋ*
n final	W Gr. 76° (C. York)	*piŋasun* three	*täλ·iman* five	*qulin* ten
t final	W Gr. 72°—60°	*piŋasut*	*täλ·imat*	*qulit*
n final	E Gr. 66° (Amm.)	*piŋasin*	*tät·imã*ⁿ	*qulin*
q	W Gr. 72°—60°	*peqarpoq* it is at hand, is to be had	
r̥ (unvoiced r)	E Gr. 66° (Amm.)	*perarpoŋ*	
	katin·eqarquwλugit inviting them to gather together		
	kalin·eraruwtigit		

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in Greenland.

the place of articulation retained.

tuloŋaŋ a raven	—	—
tuloŋaq or *tulugaq*	*a·ᵘp·oq* thaws, melts	*-poq* (verbal suffix)
	a·ⁱp·oŋ	*-poŋ*

qeŋiwoq (or *qeŋiwoq*)	*erneŋa* [*eŋneŋa*]	*anoŋe* wind
qeriwoq is frozen stiff	*ernera* his or my son	*anore*
qegiwoŋ (or *wo*)	*ernera*	*anerē*

ŋiλ·oŋo throwing it away	*niŋaq* snare	*na·laŋaq* one who is obeyed, master
ĝiλ·ugo	*nigaq*	*na·lagaq*
ŋit·iŋo (or *iĝit·īgo*)	*niĝa·*	—

wing (suffix) place	*-ling* (suffix) who has or is supplied with
wik	*-lik*
piŋ	—

aλ·e·n trousers	*-niun* (suffix) who dwell there, inhabitants	*-suin* (suffix) big, large,	*-un* (suffix) a means to, instrument
arλ·t	*-miut*	*-suit*	*-ut*
—	*-m·n*	(*-tuin*)	—

teqarpoq he has a name, is called	*neqe* meat (to eat)	*-qartoq* (suffix) who has
terarpoŋ	*nere*	*kuisorartoŋ* one who has a membrum, male

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q·]	W Gr. 72° N. lat. (Up.)	*tarqip·oq*	is hidden behind something
ρ·]	W Gr. 71°—60° (Omnq., M Gr., S Gr.)	*taρ·ip·oq*	(the sun) has gone down
q·]	E Gr. 66° N. lat. (Amm.)	*tarqip·oŋ*	

]	*marqaq* clay, clayey banks	*qarqɛ·t* come hither
]	*maρ·aq*	*qaρ·ɛ·t*
]	—	—

k·]	W Gr. 72° N. lat. (Up.)	*ȧk·erpoq*	he is approaching
χ·]	W Gr. 71°—60° (Omnq., M Gr., S Gr.)	*aχ·erpoq*	
k·]	E Gr. 66° N. lat. (Amm.)	*ȧk·erpoŋ*	

]	—	*nȧ·k·a* no	*miȧ^{w}k·o·rtut* howling (dog)
]	*naχ·uwia* its origin	*na·χ·a*	*miaχ·o·tut*
]	*nak·iwia* his or her father	(*e·rqe*)	—

s·, *'ç*]	W Gr. 72° N. lat. (Up.)	*-s·oq* (participial suffix)	*tikis·oq* one who has arrived
t·]	W Gr. 71°—66° (Omnq., M Gr.)	*-t·oq*	*tikit·oq*
ts]	W Gr. 66°—60°(?) S Gr.	*-tsoq*	*tikitsoq*
ts]	E Gr. 66° (Amm.)	*-t·çeŋ*	*tikil·çeŋ*

]	*a·^{i}s·a·t* just now, just recently	*nä^{i}s·eq*	a fjord-seal (phoca foetida)
]	*a·^{i}t·a·^{i}t*	*nät·^{i}eq*	
]	*a·^{i}tsa·^{i}t*	*nätseq*	
]	*a·^{i}t·ça·^{i}t*	*nät·sia*	

]	*is·uanisa·rpoq* is peeping through the window	*qas·oŋawoq*	is quiet (the weather or the sea)
]	*it·uanisa·rpoq*	*qat·oŋawoq*	
]	*itsuanisa·rpoq*	*qatsoŋawoq*	
]	*it·^{i}uarpoŋ*	—	

'ç]	W Gr. 72° N. lat. (Up.)	*oqa·^{w}^{i}çeq* a word	*ajornakȧw^{i}çaqa·^{o}q*	it is damned poor
s]	W Gr. 71°—60° N. lat.	*oqa·^{w}seq*	*ajornakȧ^{w}s·aqa·^{o}q*	
s]	E Gr. 66° N. lat. (Amm.)	*ora·^{w}sia*	(*ajornakajeqa·^{o}q*)	

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tarqarsv·t a looking-glass	*erqortät* clothes which have been washed	
taρ·arsv·t	*eρ·ortät*	
tarqarse·t	*erqortät*	

talerqip·a· he gets an inkling of something	*nerqiwiane*(?) on or at his table	
taleρ·ipa·	*neρ·iwiane*	
—	*nerqiwiane*	

ᵛk·orpa· he divides it, cuts it into pieces	*säk·aq* a thin-haired skin	—
ᵛχ·orpa·	*säχaq*	*tiχ·aq* a he-seal
ᵛk·urpa·	*säk·aq*	*tik·ä*

ik·erλoηo setting a snare for it (the bird), catching it in a snare
iχ·erλoηo
—

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jiη·isoq one who is good	*manɛ·s·oq* that which is uneven	*kaᵗçoηane* soon
joη·it·oq	*manɛ·t·oq*	*kat·orane*
joη·itsoq	*manɛ·tsoq*	*katsorane*
jiη·iᵛt·çeη	*manɛ·tseη*	*kˡat·çˡernanˡe*

uç·ät hair (plur.) of the head	*qis·up·a·* he scratches it	—
ut·ät	*qit·up·a·*	*aᵗt·a·rpoq* is yawning
utsät	*qitsup·a·*	*aᵗtsa·rpoq*
ut·çak·a	*qit·çip·a·*	*a·ˡsa·rpoη*

awaη·arnis·ät (or *-niᵗsät*)	—
awaη·arnitsät people from the south	*qaç·orarpa·ɪ* piles them up
awaη·arnitsät	—
awaη·arnitsˡän	*qat·çerarpa·* flings it ashore

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s·, *ς*] W Gr. 71°—60° *tamas·a* here it is! *täs·a* there it is; there is that!
t·, *ts*] E Gr. 66° (Amm.) *tamat·a* now immediately *tätsa*

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s] W Gr. 72°—60° *puise* a seal *asäsa·* the one he loves
l] E Gr. 66° *puile* a seal *asala·* the one whose property he takes

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(*t*)] W Gr. 72° N. lat. (Up.) *kätuna·suit* (*kutättoq* pronunciation)
λ·] W Gr. 72°—60° (N Gr., S Gr.) *qaʷλ·una·rsuit* the large Europeans
t·] E Gr. 66° (Amm.) *qatt·una·q*

] W Gr. 72°—60° *uʷλ·ut* days *uʷλ·ume* today *uʷλ·orpoq* it
] E Gr. 66° (Amm.) *uʷt·un* *ut·ume* *ut·ulerpoη*

] *aλ·uaq* a hole made in the ice (to fish or breathe through) *aλ·eroq* jaw-bone
] *at·ua* *at·erue*

] *piʷλ·uarna* may you be happy *piʷλ·uqo* (*-ηo*) on account of that
] *piʷt·uarna* *piʷt·öηo*

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j] W Gr. 76° N. lat. (C. York) *kijima* I alone —
s] W Gr. 72°—60° *kisima* *-kasik* (suffix) evil, repulsive
j] E Gr. 66° (Amm.) *kij·tᵃarma* I alone *-kajik* (e. g. *nanekajik*,

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p·] W Gr. 72° N. lat. (Up.) *-pik* (suffix) place *kisarpik* anchoring ground
φ] W Gr. 71°—60° N. lat. *-φik* *kisarφik*
p·] E Gr. 66° N. lat. (Amm.) *-piη* *kisarpiη*

] *sarpaq* current *suna·ʷp·a* what (is) that there! *kiʷp·at* servants
] *sarφaq* *suna·ʷφa* *kiʷφ·at*
] *sarpaq* *suna·ʷp·a* *kiʷp·at*

] *aʷp·arλia* side-room *sap·iortoq* a smith *ilarpäλ·ät·a·rpoq* he is
] *a·ʷφarλia* (?) *saφ·iortoq* *ilarφäλ·ät·a·rpoq*
] *ap·arsea* — —

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pis·awa, pis·ua	*aç·iwoq* spits blood	*aç·arlorpoq*	transports
pitjsawa· he will get it	*at·iarpoŋ* (hemoptysis)	*at·arpoŋ*	something

---

care of			
—	—	—	
sorλo just like	*iλ·o* house	*iλ·orsuaq* a large house	
sorto	(*it·o*) *it·ïwa* his house	*it·ertuaq*	
has become day	*a·^{w}λ·arpoq* he is departing	*orλuwoq* he is falling	
	a·^{w}t·arpoŋ	*ortoɔ·q*	
aλ·eq a long-tailed duck (anas	*aλ·at·o·q* a young seal	*maraλ·uk* boy, morass	
at·erajik glacialis)	*at·at·e·^{r}*	*marat·çuk*	
ernerλuqo (*-ŋo*) doing it im-	*oqarλune* speaking	*aλ·una·q* a strap (of hide)	
ernertönŋo mediately	*oqartune*	*at^{s}ina·q*	

—	—	*j*] ibid. *piŋujak* a blister	
nanokasik	*sisamat* four	*t·*] ibid. *piŋit·aŋ* a gulls' dunghill	
it·ekajik) (names)	*^{t}si^{j}amat*		

—			
iλ·oqarφik place where there are houses, settlement		*oqarpiŋa·* he says to him	
it·eqarpiŋ		*oqarφiqa·* (*-ŋa·*)	
		oqarpiqa·	
serpät black guillemots	*ka^{w}p·it* coffee	*sip·orpa·* wrings the water out of it	
serφät	*ka^{w}φ·it*	*si^{w}φ·orpa·* (the skin, the clothing)	
—	—	—	
exaggerating (in his story)		—	
		ti^{w}φ·uarpa· spits it out with a breath	
		tip·ukarpa·	13

r] WGr. 72° (Up.)	*pa·°rortoq* creeping		*η, ŋ*] WGr. 76° (C. York)	*nâsaŋa·* my ca
η] WGr. 69° (Jkh.)	*pa·ʷηortoq*				
m] SGr.	*pa·°rmortoq*		*r*] WGr. 71°—60°	*nâsara*	
n] EGr. 66°	*pa·ʷrnorto(q)*		*η*] EGr. 66° (Amm.)	*(pu·ŋa)*	*-ŋa* my

η] WGr. 76° (C. York)	*tuluŋaq* a raven	*qilaluŋaŋ* a white whale	—	
η] WGr. 72° (Up.)	*tuluŋaq*	*qilaluŋaq* (delphinus laukas)	*niwiuŋak*	
w] WGr. 71° (Omnq.)	*tuluwaq*	*qilaluwaq*	*niwiuwak*	
g] WGr., SGr.	*tuluqaq*	*qilaluqaq*	*niwiuqak*	
] EGr. (Amm.)	*tulua*	*qilaliqaq*(?) or *qi·aliwaq*	—	

η] WGr. 72° (Up)	*na·ᵘηoq* is at an end	*a.ʷηoq* it is rotten	*asaŋoq*	he loves
w] WGr. 71°—60°	*na·ᵘwoq*	*a·ᵘwoq*	*asawoq*	
w(?)] EGr. 66°	*na·woŋ*	*a·ᵘwoŋ*	—	

ʷk·] WGr. 72° (Up.)	*kiʷk·umiarpa·*	bears it on the arm, holds it lifted
ʷχ·] WGr. 71° (Omnq.)	*kiʷχ·umiarpa·*	
ʷs·] WGr., SGr.	*kiʷs·umiarpa·*	
ʷt·] E. Gr. 66°	*kiʷt·umiarpa·*	

k] WGr. 72°—66°? (NGr.)	*ko·roq* valley, chasm
q] WGr. 66°—60° (SGr.)	*qo·roq*
q] EGr. 66° (Amm.)	*qo·roŋ*

η·] NGr.	*iʷη·erpoq* is singing a drum-song	*erʷηuseq* a bottle, jar	—	
m·] SGr.	*im·erpoq*	*erᵐuseq*	*im·iŋ·uaq*	(a kind of fish)
η·] EGr.	*iʷη·erpoŋ*	*erʷηuse(q)*	*iŋ·iŋ·uaq*	

η] NGr.	*uniφ·iŋa·ι*	he stays with them (on the journey)
g] SGr.	*uniφ·iga·ι*	
w] EGr.	*unip·iwa·ι*	

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with the place of articulation moved.

ʳη]	W Gr. 72° (Up.)	*aʷηorqa·ra* speaks to him harshly, reproaches him	ρ·]	N Gr.	*oρ·a.woq* (the boat) rolls	ρ·]	*ilορ·aq* the right side
ʋ]	W Gr. 71°—60°	*aworqa·ra*	w]	S Gr.	*uwa·woq*	rφ]	*ilorφaq* of the kayak
n]	E Gr. 66°	*amorqa·wa·*	ρ·]	E Gr.	*orqa·woη*		

blue-bottle	—	—	—	
	tυ·ηa·q tusk (of a walrus etc.)	*υ·ηaq* codfish	*eqaluηaq*	salmon-trout
	tυ·ηa·q	*υ·waq*	*eqaluwaq*	
	tυ·ga·q	*υ·ǧaq*	*eqaluηaq*	
	—	*υ·wā*, plur. *υ·ʷkȧn*	*eqaloraq*	

ɒiumaηoq he is willing, he wishes	*aλ.ˡa·ᵒηoq* is something else or someone else, is a stranger	*qupiηoq* it is cleft	*paʷηuηa* up there (toward the east)	
ɒiumawoq	*aλ·a·ʷwoq*	*qupiwoq*	*pawuηa*	
ɒi··maoη	*at·a·ʷwoη*	*qupiwoη*	—	

·] (C. York)	*ik·e·* (?)	ʷk·]	(ibid.) *iʷk·in*	those
r] W Gr. 72°-60°	*is·e* cold, frost	ʷλ·]	(ibid.) *iʷλ·it*	
·] E Gr.	*i·t·ileqā·* it is very cold	ʷt·]	(ibid.) *iʷt·ïn* or *iʷt·ïʷn*	

k] (Up.)	*kanoηip·it* (*kutät·oq* pronunciation) how are you?
q] W Gr. 72°-60°	*qanorip·it*

kaη·us·aq copper, brass	m·]	(ibid.) *qum·orsorpoq*	(the sun) is peeping out
kan·us·aq	η·]	(ibid.) *quη·orsorpoq*	
	]	(ibid.) —	

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i] W Gr. 76° (C. York)	*iliwerqiwik* a stone-cellar, stone-pit	
i (*u*)] W Gr. 72° (Up.)	—	
u] W Gr. 71° (Omnq.)	*iluʷerquwik* (*iluweq*)	
i (*u*)] W Gr. (S Gr.)	*iliweq*	
i] E Gr. (Amm.)	*iliã*, plur. *Ilerqin* (name of a place) cf. *Iliwermeˑt*, the inhabitants of *Ilerqin*.	

---

u] W Gr. 71°-66°?	*iluweq* a grave	*ituwneq* a pass, valley	*kalunˑeq* a chain.	
i] S Gr.	*iliweq*	*itiwneq* (between two fjords)	*kaliʷnˑeq*	link
i] E Gr.	(*iliweq*)	*itiʷnˑeŋ*	*kalinˑeq*	

---

u] W Gr.	*ȧλˑerqut* the jaw-bones	*ȧλˑuaq* hole in the ice	*alusˑarpaˑ* is licking it up	
i] E Gr.	*ȧtˑerqin*	*ȧtˑiwa*(*q*)	*alitorpaˑ*	
] *iserφiqiqamiuk* when he went in to him			*kiqutilik* one who has teeth	
] *iserpiqiqamɯk*			*kiqitilik*	
] *naˑitsut* short ones		*nasarmiutaq* a little bird (of the sparrow family)		
] *naˑtit* short trousers		*narsarmɯlaŋ*		
] *piŋujak* a blister	*pisutˑoq* one that walks		*puisersuaq* a large seal	
] *piŋilaŋ*	*pisitˑoŋ* (one that walks) a bear		*puilertiwa*(*q*) a ground-seal (phoca barbata)	
] *takoreˑruniuk* if he sees him		*taˑimanikˑut* that time, in those times		
] *takereˑrinɯk*		*taˑimanikˑit*		

---

o] W Gr.	*ȧλˑȧtˑoˑq* a young seal	*ȧλˑeroq* a jaw-bone	*amaroq* a wolf	
e] E Gr.	*ȧtˑȧtˑeˑŋ*	*ȧtˑereŋ*	*amare* (now only applied to persons	
] *nanokasik* the naughty bear		*sȧnasoq* one who makes (builds etc.) something		
] *nanekajik* (name of a person)		*sȧnaleŋ*		

differentiations.

is·iuφ·a (interjection:) I should have thought that	—	
usiuk·a	*ajiŋ·ilaq* or *ajiʷŋ·ilaq* is good, is not bad	
usiuφ·a	*ajuŋ·ilaq*	
usiuφ·a	*ajuŋ·ilaq*	
isi ip·a	*ajiŋ·ilaŋ*	

kaluʷs·arpoq pulls and jerks in order to advance	*qap·uarpoq* froths; talks incessantly	*tiç·uka·woq* drifts on the sea for wind and tide
kaliʷs·arpoq	*qap·iorpoq*	*tiç·ika·woq*
kalitarpoŋ	*qap·iala·rpoŋ*	—

ut·siuλ·ugo (*-ŋo*) naming him	*ilumio* a fetus	*inuk* human being, Eskimo
ut·ᵉɾt·ugo	*ilimiaŋ*	*inik*(?), *eˑ*
kiʷφ·a·ʷŋa I am a servant	*qalequta·ɾ* a cover, the outer covering of something	*qeqoq* clay, chalk
kiʷp·a·ˡŋa he has me as his servant	*qaleqita·ɾ*	*qeqik*
ukerua·ɾ its or his sinews; strength	*piaraŋ·uaq* one of the young (of an animal)	*piŋasut* three
ukeriwɾ (*-waɾ?*)	*piaraŋ·iwasik*(?)	*piŋasin*
ikut ice (plur.)	*takuwoŋa* I see	*takuwit* (or *-ɾt*) do you see (it)?
ikit	*takˌiwoˌa*	*takive·*, *takiwin*

usarnersumik something that is delightful to hear (Instrumentalis)
usarnersimik

nore the wind	*kiŋornaqut* (*-ŋut*) after him or it	*marλuk* two	*nano*(*q*) a bear
nere	*kijernaqit*	*marλe*	*nanˈeŋ* (obsolete)

ɲρ·arsv·t a mirror	*najorpa·tit* he is dwelling with you
arqarse·t	*nɾjerpa·tit*(?)

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i, a] WG. 76° (C. York)	*niŋˈik* a snare (for birds)	*haˑmilaŋ* yes of course,	
e] WG. 72° (Up.)	*niŋˈeq*	*ŋˑ(ila)*	yes!
a] WG. 71°—60°	*niŋˈaq, niqaq*	*aˑp(ila)*	
a, i] EG. 66° (Amm.)	*niŋaˑ*	*aˑmilaˑ, ɛˑmilaˑ, ɛˑ*	

IV. Denalization

n, ŋ] WGr.	*inuk* a human being	*inuit* human beings	*inoŋˑortoq* one that
—] EGr.	*eˑ* or *ẹˑ* < **inik*?	*eˑwɛn* or *eˑweˑ*	*inoŋˑortaˑ* her new-

]	*kɛˑnalik* one who has a face	*inaˑne* in its place, nest, lair	
]	*kɛˑaliŋ* an owl	*inaˑne* or *iaˑne* in the stump-bed	

]	*kiŋuaˑˈsa* his descendants	*kiŋumut* back, again	*kiqutaˑɛ* his teet
]	*kiǧiwaˑɛa*	*kiǧimut*	*kiǧitaˑɛ*
]	—	(or *kɛˑmut*?)	(or *kɛˑtaˑɛ*?)

I shall try to give a short sketch of the chief phonetical peculiarities of the Greenlandic dialects so far as I have been enabled to get information about them*).

The stock of sounds found in the phonetical analysis of the language (v. p .81) seems to prevail throughout the whole of West Greenland except in the *Upernawik* District, where three of the long aspirated fricatives are absent; the fourth, the *λ*-sound is possibly modified in more cases than in the one which I noted down (v. p. 192), but it occurs in a great many words which I took note of in *Upernawik*, so it does not seem to have had the same fate as the related sounds (*ρ χ φ*, among which, however, it would always occupy a peculiar position).

*) With respect to the musical accent, I shall simply refer to what I have said about that subject in § 22.

—	—
—	—
a·ʷη·o·q yes is said	*imin·a* such a one, thus
rη·ɔ·(q)	*iman·a* thus

---

and loss of sounds.

has become a human being, is born	*inuiaqatigɛ·t* (*-ηɛ·t*) crowds of human beings
born child	*ineʷqatigɛ·t* (or *ɛwiaqitigɛ·t*?)
inimɛ·pa is he (or it) in (in the house)?	*iηerλagamik* when they had travelled a while
inimɛ·pa or	*eǧˡertaǧamik*
·mɛ·pa	—
ɛiηorna after that, later on	*niwiarsiaq* unmarried woman, maid
ɛiˡeʷrna	*nɛ·jarsiaη*
—	—

The consonant-system in the dialects of *Oommannaq* and *Upernawik*

	uvula	back	point	lip	uvula	back	point	lip	
Stopped Consonants	*η*	*η*	*n*	*m*	*η*	*η*	*n*	*m*	voiced
	q	*k*	*t*	*p*	*q*	*k*	*t*	*p*	voiceless
Open Consonants (Fricatives)	*r·*	*g*	*j l*	*w*	*r*		*j l*	*w*	voiced
	ρ	*χ*	*ς λ*	*φ*			*ς λ*		voiceless

North of *Oommannaq*, then, *ρ· χ· φ·* are replaced by *q·* (= *rq*) *k·* and *p·*. Not always, but yet to a great extent *t·* (South Greenlandic *ts*) is replaced by *s·* or *s*, and likewise in many significant cases, *r* is replaced by *η* and *w* by *η*, this last for instance in the 3 pers. ind. of all the verbs which otherwise in Greenland end in *-woq*, but in *Upernawik* in *-ηoq*.

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As for the vowels, we find occasionally *i* for *u* (*ajiŋ·ilaq* or rather [*ajiʷŋilaq*] for *ajuŋ·ilaq*). *ü* is said to be more frequent than elsewhere (*perqüʷλoŋo* for *perquʷλoŋo* etc.)*). On the whole, the vowels seem to become more strongly fronted and palatalized than farther south.

These peculiarities of the *Upernawik* dialect present themselves in a strange light on account of the fact that the *kutät·ut* phenomenon is especially common in this part of Greenland (cf. § 30). The organs of speech here seem to have a special tendency to a childish pronunciation of the words.

About the language at Cape York, only very little is known. The people at *Upernawik* who have had an opportunity to meet with them on expedition ships, say: "We understand them very well and use the same language, yet theirs is somewhat strange (*immikkut*), and when they talk together rapidly with each other, we cannot understand them". It seems as if they in several cases have *j*, or a similar voiced sound, for *s***). Furthermore it appears from the lists of words that they almost regularly in the final position have *n* for *t*, *ŋ* for *k*, also perhaps sometimes *ŋ* for *q****). I have not otherwise met with this in isolated words in the present West-Greenlandic language, but only in connected speech, when *t* and *k* occur between two vowels (*sʊ·t uko* > *sʊ·n-uko* [1])).

All in all, then, there seems to be some difference between

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*) M. Mörch: Avangnâp tungâne oqalugpalârusiaq (a little account from North Greenland, from *Ilʲ·orsuit*), in Atuagagdliutit 1900, no. 2, p. 19.

**) Pastor Mörch in *Upernawik* writes to me: "Those natives of Cape York which Peary brought with him were not *kutättut*;" [cf. p. 179] "I spoke with two of them who had come ashore; they spoke like the Greenlanders here, but they pronounced *s* indistinctly. They said *aqago takujuvagit* instead of *aqago takussuvagit* (I shall see you to morrow), *kijima* instead of *kisima* (I alone)".

***) When Kroeber writes *tunirng* (corresponding to the South Greenlandic *tuneq*, an inhabitant of the inland), this may perhaps be rewritten phonetically as [*tunëŋ*].

[1] what (are) they?

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the dialects of Cape York and of *Upernawik*, even if only slight.

The difference between the dialect of *Upernawik* and South Greenlandic must be considerable, if those natives of *Upernawik* are to be believed who declared that they could not understand a South Greenlander at all with the exception of some few single words. Even as far north as in the *Oommannaq* District I met Greenlanders who thought that people from *Upernawik* talked very differently from themselves.

Upernawik and *Oommannaq* have in common the sporadic occurrence of *ŋ* instead of *r* between two vowels: *nēŋiwɔq* (he is eating) for *neriwɔq* etc.

Common to the whole of North Greenland all the way from *Upernawik* to *Aʇo* (*Agto*) is the use of *ŋ* for *g*. According to private information*), the *g*-sound does not begin to be in common use before at Holstensborg and from there toward the south as far as *Nanortalik* in the Julianehaab District, accordingly in "Middle Greenland" (about 60°—67° N. lat.). To the south of the Eskimo settlement *Iλ·okasik*, which lies south of the last mentioned trading-place, *ŋ* is again used instead of *g*. Yet I have found *g* used sporadically in North Greenland, both in Disko Bay and *Oommannaq* Fjord (cf. § 8), but *ŋ* is everywhere the most frequent. In the *Upernawik* dialect, I got the same impression, although the incompleteness of my investigations there leave me in uncertainty as to which of the two sounds is most predominant.

Also the sound-group *rŋ* (or *rŋ*, *ŋ*) seems to be common to all North Greenlandic as opposed to the South or Middle Greenlandic *rn* (sometimes *rm*). Examples of this are given in § 8, p. 82 (cf. Chr. Rasmussen Grönl. Grammatik p. 15).

*) From the present director of Godthaab Seminary, who at my inquiry took the trouble to test the pronunciation of Greenlanders from all parts of the west coast in a number of words where South Greenlanders pronounce the sound *g*.

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With respect to the use of *t* and *s*, West Greenland may be divided into three parts: the South Greenlanders use the sound-combination *ts*; instead of this, long *t* is used north of Holstensborg (?) as far as the north coast of *Oommannaq* Fjord; in the *Upernawik* District we find in these cases *s* or ç (post-palatalized and usually long).

Long *s* (or in Kleinschmidt's orthography *ss*), which is common to all of West Greenland, has a peculiarly modified articulation in South Greenland by which it becomes different from the short *s*. This peculiarity also constitutes one of the differences between South Greenlandic and North Greenlandic, but, since I have not had the opportunity of becoming acquainted with the South Greenlandic pronunciation by hearing it myself, I do not know in how far this *s*· resembles the *Upernawik* ç·-sound (cf. § 9).

The dialect of *Ammassalik* in East Greenland has the following peculiarities: *q*· *k*· *p*· instead of *ρ*· *χ*· *φ*·, likewise *t*· for *λ*· (in the language of *Upernawik* *λ*· is usual, in the language of *Am·as·alik*, rare). Furthermore *i* (*ĭ*?) is to a large extent used instead of *u*, *e* instead of *o*, these vowels having become unrounded; this is, to be sure, unusual in *Upernawik*, but it is not altogether unknown. — The *g*-sound seems to be usual in East Greenlandic, whereby it is connected with South Greenlandic on the west coast. Likewise this dialect is no doubt connected with South Greenlandic in its use of *ts* (i. e. *tç*) where the middle belt on the west coast has *t*· (Jakobshavn —*Oommannaq*) and the *Upernawik* dialect ç·. Thus, from a phonetical point of view, it deviates from the dialect of *Upernawik* in two essential points, a fact which makes me hesitate to assume a very close connection between these two dialects.

On the whole, it may be said that most of the peculiarities are piled up in the language of *Am·as·alik*, which bears evidence of having been isolated for a long time. When the

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language at Smith Sound and in *Upernawik* District is more closely examined some time, it will probably be possible to decide how great importance, if any, is to be attached to the points of resemblance between these dialects. Perhaps it is already worth while noticing the scattered instances where the East Greenlanders just like the natives of Cape York, have *j* instead of *s* and *i* instead of *a* (*i·m* = *a·p*). — The language of *Am·as·alik* is especially striking for its frequent change of *q* to *r* and for its peculiar cases of the loss of a nasal consonant between two vowels within the very stems of words.

§ 32. Dialects outside of Greenland. The object I now have in mind is with the help of my knowledge of the phonetical nature of the Greenlandic language, to make some conjectures with respect to the phonetics of the more distant dialects west of Davis Strait, to see how far it is possible to follow the Greenlandic system of sounds in them, and to compare the various deviations which have fallen to the lot of their sounds and word-forms.

Since I have had no opportunity to become acquainted with the living, spoken language, I shall try to get along as well as possible with what there is to be had of written specimens of these dialects.

It is convenient to begin with the dialect of Labrador, which is best known.

In form, the consonant system of this dialect corresponds fully to the South Greenlandic system. There are the four stopped consonants (*q k t p*), the four voiced fricatives (*r ɣ l w*), and the four nasals (the group *rŋ* occurs). With respect to the unvoiced fricatives, there can be no doubt, to judge from Bourquin's description of the consonants (Gr. § 5—6), that at least three of them occur. In the Labrador orthography, [*ρ·*]

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is indicated by *ch*, *rg*, [χ·] by *gg*, *vg**), [λ·] by *dl* (*rl*, *vl*); *bv* corresponds to the Greenlandic [φ], as in *uibvak*, a fern, = Gr. *uιφ·ak*; they are both unvoiced, but the Labrador sound is probably slightly less open than the Greenlandic sound. It is rare. The *s*-sounds seem to be just as loosely articulated as in Greenland and seem here too to be of a double nature (Bourquin Gr. § 8—9). [*g*] is used in Labrador as in South Greenland, but in North Greenlandic it is changed to [η].

The phonetical elements of the two languages seem on the whole to correspond to each other; on closer comparison, however, we find not a few cases of sound-shiftings, just as there are also various grammatical-morphological and lexicographical differences. Here only the phonetical relations will be taken into consideration.

[*g*—*w*] L. *õgak* [*υ·gaq*] codfish, *tullugak* [*tulugaq*] raven, *tôgaq* [*tυ·gaq*] walrus tusk; West Greenlandic has in these words in some districts *-waq*, in other districts *-gaq*, cf. § 30 (p. 194—195). A blue-bottle is in Labrador called *niwiuwak*, in Greenland the suffix is *-wak* or *-gak*. The verbal suffix in Labrador is *-vok* [*wɔq*] just as in the greater part of West Greenland (but Up. *-ŋoq*).

[*t*—*s*] [*j*—*s*] *t* and especially *j* have in a number of cases in Greenlandic passed into *s*, while in Labrador they have remained unchanged. *j* is therefore much rarer in Greenlandic than in Labrador. It is possible that there may be proved some phonetical law for these transitions, especially for the change of *j*.

I take the opportunity here also to cite a number of parallel examples from the more distant dialects in order to be able to refer to a complete survey whenever I find it necessary in the course of the following investigation.

Where there is no remark to the contrary, the word in the second column has the same meaning as the corresponding word in the first column.

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*) Except in the word *magguk*, where *gg* = [ρ·], cf. Bourquin Gr. § 6, note.

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Labrador *t*	Greenland *s*
sittamat four	*sisamat*
itterpok goes in	*iserpoq*
makitek, hip, loin	*makiseq*
ittigak toe	*isiqaq*
qarritak brain	*qaraseq*
illitarsivok he knows	*ilisarsivoq*
kēta a little; just now	*kɾsa* finally, at length
ipte juice in plants or meat	*iʷs·eq*

Labrador *j*	Greenland *s*
qejuk wood, kindling wood	*qisuk*
puije a seal	*puise*
îje an eye	*is·e*
ijerpa hides it	*is·erpa·*
angijok large	*aŋiso·q*
-jok (participial suffix)	*-soq*
-ujak (nominal suffix) resembling something	*-usaq*
-uja·rpok (verbal suffix) it resembles something	*-usa·rpoq*
-rkijak which is something in a higher degree	*-rqisa·rpoq* does something carefully, exactly
aujak summer	*a.ᵘsaq*

Labrador *tj*	Greenland *s·*
igalatjat windows	*iqaläs·ät*
tingmitjat birds	*tim·is·ät*
uvloritjat stars	*uʎ·oris·ät*
ajutjat boils	*ajus·ät*
tôtjak[1]	*tɒ·s·aq*[1]
kitjarpok is warm	*kis·arp·oq*
katjarekpok has got a deep voice	*qas·arip·oq*

[1] The chief beam in the roof of an Eskimo house or at the top of a tent supporting the smaller cross-beams.

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kutjarpok gets the head down	*kus·arpoq*
kutjangavok has the head bent down	*kus·aŋawoq*
itjuarpa imitates him	*is·uarpa·*
itje frost, cold	*is·e*
katjukpok hammers or beats on something	*kasup·oq*
ketjiorpok chops or hews wood	(?) *qis·iarpoq* is out in a boat to fetch driftwood
kutjinek the dry bed of a stream	*kus·ineq*
ĭtjivok has got something in his eye	*is·ip·oq*

Labrador *ts*	Greenland *s·* or *s*
adsinga his portrait	*as·iŋa*
appertsuk a question	*apersu·t*
ātsuk I do not know, I do not think so	? *a·sik* no, I will not do it [1] ? *asukiaq* perhaps, I do not know
innûtsuk a young one	*inu·sut·oq*
kautsiovok is wet	*qa·ʷserpoq*
neitsarpok is on the look-out on a hill	*nasip·oq*

Labrador *ts*	S. Greenland *ts* (N. Gr. *t·*)
adsa father's sister	*atsak*
atsit sleeves	*atsit* (plur. of *a·q*)
ātsivok he brings	*a·tsiwoq*
atsikpoq it is down, is in the deep	*at·sip·oq*
aulatsivok puts it in motion	*a·ʷlätsiwoq*
ikkitsijut a burning-glass	*ikitsisit* matches
itsek yolk of an egg	*itsik* white of an egg
itset tent-skins, skins that have been sewed together	*itsät*
itsorpok goes out to look around	*itsorpoq*
itsuarpok looks in (or out) through a window, door etc.	*itsuarpoq*

[1] Mostly used by children.

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katsungavok he is lazy, negligent (in his work)	*katsorpoq*
kippitserpa is homesick, feels great longing	*kipit·sȧp·oq*
kōtsikpok is high, is situated high	*qut·sip·oq*
kutsok resin, colophony	*kutsuk*
minnitjsivok leaves him out in distributing (food etc.)	*minitsiwoq*
okutsek this place (which is pointed at)	*ukutseq*
-titsivok (verbal intransitive suffix)	*-titsiwoq*
-tsiak (adjectival suffix) tolerably big or little, of moderate size	*-tsiaq*

Labrador *pj, vj*	Greenland $^{w}s\cdot$
tipjarluk (B.) drift timber etc.	*ti^{w}s·arλuk*
kipjaut a pair of scissors	*ki^{w}s·arpa·* he cuts his hair
kavjeḳ a whirl	*ka·^{w}seq*
ivjovok it is thick	*i^{w}s·uwoq*

Labrador *kj gj*	Greenland *ç·*
nakjuk a horn	*naç·uk*
sigjak strand, coast	*siç·aq*
ugjuk seal (phoca barbata)	*uç·uk*
kogjuk a swan	*quç·uk*
tugjut a stretcher [1]	*tuç·ut*
koakjuk a sharp edge	*quaç·uk*

Labrador *rj, rg*	Greenland *rs·*
morjuppok sinks down deep (in snow etc.)	*morsup·oq*
kargjoq an arrow	*qarsoq*
nergjut a large land-animal (bear etc.)	*nersut*
ergerpok becomes visible, can be seen	*erserpoq*

[1] a stretcher with which the skin covering is tightened when it is being put on the boat.

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Labrador *gg* [χ]	Greenland ς·
aggak a finger	*aς·aq*
iggak snow-spectacles	*iς·a·ᶫk*
kiggerpok jumps	*qiς·erpoq*
akigek a ptarmigan	*aqiς·eq*

Labrador *qw*	Greenland $^{w}ς·$
nagvâk a find, something which is found	*nä^{w}ς·a·q*

N Alaska *tj*, *dj*	Labr. *ts*, *t·*	N Gr. *t·*	S Gr. *ts*
[*tj*] *nutye* hair of the head	*nutset*	[*t·*] *nut·ät*	[*ts*] *nutsät*
netye ringed seal	*netsek*	*nät·eq*	*nät·seq*
utyu vulva	*utsuk*	*ut·uq*	*utsuk*
i·gutyä humble hee	*igupsak*	*iŋut·aq*	*iqutsak*
naityuä short	*naitok*	*na·ᶫt·oq*	*na·ᶫtsoq*
kainiᶫtyuä near	*kannitok*	*qanït·oq*	*qanit·oq* **-ŧsoq*
akiᶫtyuä soft	*akkitok*	*aqit·oq*	*aqitsoq*
audlaniûñiᶫtyûñä I shall not go	*a·^{w}λ·arniäŋ·it·oŋa*		*-tsoŋa*
awûñariᶫtye (plur.) go away	*-itse*	*-it·e*	*-itse*
[*dj*] *púdjutin* claw of a crab	*putsutit*	[*s*] *pus·uqutit*	

SW Alaska *dj*	Labr. *ts*, *s*	N Gr. *t·*, *s*	S Gr. *ts*, *s*
id-jiᶫvak some time ago	*itsak*	*it·ak*	*itsak*
ka-djichᶫtuk to rest, to be idle	*katsungavokᶫ* he is idle	*kat·orpoq* or *qat·orpoq*, cf. *qasuwoq* he is tired	*katsorpoq* or *qatsorpoq*, cf. *qasuwoq*
nädᶫjak a cap, hat	*nessak* pl. *-set*	*näsᶫaq*, plur. *nᶫät·ät*	*näsᶫaq*, plur. *nᶫätsät*
[*tς*] *nut-shuchᶫlugu* to pull out	*nutsukpait* he pulls them		*nutsuλ·ugo*
kadᶫjek spittle, spit			*qiseq*
[*tς*] *ḱcherᶫtōă* I spit	*kesserpoq* he spits	[*s*] *qiserpoq*	

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Mackenzie *dj* (Petitot)	Labrador *ts, dj*	W Gr. *s*
nudjiapk écheveau, plur. *nudjiat*, cf. *nyapk*, plur. *nutçat*	*nutset*	*nut·ät, nutsät*
tamadja vraiment	*tamadja* (Bourquin § 192)	*tamas·a*
mudjia ceci		*mas·a*
nagdjiuk (p. VII) or *nakdjiuk* corne	*nakjuk*	*naç·uk*
adjipapk (p. XLIX) or *adgipapk* main	*aggak*	*aç·ak*
[*tç*] *nekpetchidjoapk* faire manger		*nerisis·o-*

The explanation of the distinction which has been drawn between the three kinds of *s* in Greenland (point-*s*, mid-*s*, blade-*s*, cf. § 9) is probably to be found in the different origins of the sound. But the matter is not altogether clear to me; among other puzzling points is the fact that the sounds in Greenlandic seem to pass over into each other, and this is the reason why I have not as a rule assigned them separate symbols in my spelling. Closer empirical investigations may perhaps throw light upon this sound and its conditions in the two dialects. The relation between *j* and *s* is the same as that between any voiced sound and an unvoiced sound, as, for instance, between *g* and *χ*, or between *v* and *f*. Yet in the group *tj* in the Labrador language, I think the *j* must be unvoiced and accordingly the whole sound-group very nearly related to [š], cf. the description of *j* in Bourquin, Gr. § 8. So where this sound-group (*tj*) is given, it is not necessary to presume that the transition from *j* to *s* has taken place through the medium of a voiced *s* [*z*], which, however, is probable for that series of cases where only *j* is given. — Now it is not in all cases by far that Greenlandic has got *s* where the Labrador language has *j*. Both languages have *j* in words like:

qujawoq thanks, *ujamik* necklace, *ujap·oq* stretches up over

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something, sticks out, *ujarak* a stone, *tajaq* bracelet, wristlet, *tarajoq* (L. *tarijok*) salt, salt water, *pujoq* smoke, steam, *na·ⁿja* a gull, *nȧja·* (L. *najanga*) his (younger) sister, *qajaq* kayak, etc.

Bourquin (Gr. § 8) seems to assume that in the Labrador language too *s* is the original sound in the words first cited and that the development goes in the direction of a change from *s* to *j*. It is possible that a tendency toward analogy has caused the *j* to spread in the Labrador language, but on the whole it becomes evident on considering more distant western dialects that *j* is the original and *s* the secondary sound in the words in question. — That *s* has the same phonetical value in numerous words in the two languages on both sides of Davis Strait it is not necessary for me to prove by examples.

[*k*—*q*] The Labrador language has *q* throughout in all the same words where this sound is found in Greenlandic (cf. Bourquin Gr. § 13 and § 579). Yet Labrador has *qikkertaq* (island) as over against Greenlandic *qeqertaq*. Labrador *ko·roq* (valley) agrees with North Greenlandic, where South Greenlandic has *qo·roq*. Elderly people may, however, according to Bourquin, be heard to use *q* instead of *k* in these words. — But otherwise, as has been said, the Labrador language fully agrees with Greenlandic as far as the sounds *q* and *k* are concerned.

Quite isolated stands the following case:

[*k*—*χ*] L. *aukak*, no — farther north (in Labrador?) *naukak* — UpGr. *na·k·a* — MGr. and SGr. *na·χ·a*.

[*rŋ*] occurs in many words; with respect to the occurrence of this sound in Greenlandic, I used to consider it especially North Greenlandic as over against South Greenlandic *rn*, until I found that Egede in his dictionary gives some forms with *rng* as NGr. and others as SGr. — Ex.:

L. *tôrngak* the angakok's assistant spirit — SGr. *to·rnaq* — NGr. *to·rngak* (Egede)

L. *akkorngœnne* between — Gr. *akornȧn·e*

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L. *perngâk* one who does something for the first time — Gr. *pernaq*, *perŋaq*

L. *arngoak* an amulet — Gr. *a·rnuaq* — SGr. *arngvoak* (Egede)

L. *uerngarpok* is sleepy — Gr. *u'ernarpoq* — SGr. *uérngarpok* (Egede)

The vowels agree on the whole in the two dialects. The Labrador language, like the Greenlandic, has in many words the combination *uj*. But in some cases Greenlandic [*uj*] and [*ūj*] corresponds to Labrador [*iv*], a characteristic phonetical interchange of the consonantal and vocalic articulations, which Kleinschmidt has already called attention to (Gr. § 7).

L.	NGr.	SGr.	NW Al.
ivalo a sinew	*ujalo*		*eval'oo, eya'lo*
ivajârpâ he steals it	*ujaja·rpa·*		
sivapa he roasts it	*siap·a·*	*sujap·a·*	
sivanerpok it sounds, rings	*sijânerpoq*	*sujânerpoq*	
sivo the front part, prow	*sijo*	*sujo*	*she'wa*

(cf. SW Al. *sèvâ'tōâ* I emerge from the woods etc.)

The Greenlandic forms with *suj-* I know chiefly from Kleinschmidt and literary Greenlanders; in North Greenland, I heard as a rule the forms with *sij-*. But my investigation of this sound-formation is not finished. A comparison between the Greenlandic and Labrador forms might lead us to suppose that the *w*- and *j*-sounds in these words are merely secondary sounds or glides which have originated later in the hiatic stems.

Interchange of *i* and *u*, *i* and *a*, takes place in the following examples:

[*i—u*] L. *issivsukpok* whispers — Gr. *isuwsup·oq*

[*i—a*] L. *tarijok* salt — Gr. *tarajoq*

[*a—i*] L. *ikajorpa* he helps him — Gr. *ikiorpa·*

It will be seen that most of these differentiations in sound occur in the stem-words of the everyday language; of course

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they also appear in all the suffix-formations and derivations which go back to the words in question.

Beyond these cases, the phonetical differences between the Labrador language and Greenlandic are not great. When the Labrador grammar and dictionary frequently has *mn*, *mng*, *ps*, *vl* etc. where the Greenlandic orthography (Kleinschmidt) has *vn*, *vng*, *vs*, *vdl* etc., it is certainly nothing but a case of orthographical variation. "Often *m*, *p*, *v* is scarcely heard", says Bourquin (Gr. § 9); *ngn* sounds like *nn* (§ 12), perhaps with the preceding vowel nasalized, and *kp* sounds like *pp*, *kt* like *tt*. It is just like the relation between the current Greenlandic orthography and the actual pronunciation.

As far as the sound-system is concerned, the Labrador dialect seems to be more nearly related to the South Greenlandic dialect than to the *Upernawik* dialect and the language on the east coast of Greenland.

If we now turn our attention farther north to the big Baffin Island, the chief territory of the Central Eskimo, the specimens of the language up there are far more scanty, and from those specimens that we have it is difficult to get at more than very few of the peculiarities of this dialect.

There are two peculiarities which are very marked. In the first place, many words in the Baffin language are by Boas spelled with *dj* (*tj*, *j*) where Greenlandic has *s*. Ex.:

Bf. *igdluqdjuaq* — Gr. *iλ·ors·uaq* big house
» *qaudjaqdjuq* — » *ka·sás·uk* (a name)
» *qaqdjung* — » *qa·r·s·oq* an arrow
» *tuktuqdjung* — » **tut·us·uk* ursa major (in Gr. merely *tut·o*, lit. a reindeer, but also used for the constellation)
» *usujang* — Gr. *usυ·s·aq* the projection of the stem (in an umiak or kajak)
» *angijo* — » *aŋiso·q* big
» *tingmitjet* — » *tim·is·ät* birds

I take *dj* to be unvoiced (*tš* or something like that) similarly to the Labrador *tj*, *kj*, *pj*.

In the second place, there are many nouns in the Baffin language, in which the final *q*, *k*, *t* are nasalized, so that these words always — or almost always — end in *ŋ*, *ɳ* or *n*. This is known only as an occasional phenomenon in West Greenlandic and in the Labrador dialect. In addition to the above examples, I shall give the following:

Bf. *kapun* — Gr. *kapʊ·t* lance
» *ipun* — » *iput* »
» *angun* — » *aŋʊ·t* oar used in the umiak in E Gr. and B., but in W Gr. a loose oar to steer or back water with

» *inung* — Gr. *inuk* human being
» *saving* — » *sawik* knife; iron
» *telirbing* — » *talerpik* B. the handle on a harpoon-line. Gr. the right hand or arm
» *itirbing* — » *-φik* B. the beam from the hole to the stern in a kajak (Gr. *iserφik*?)

» *nigirn*[*-ŋ*?] — » *niqeq* southeast wind
» *aqsardnirn* — » *ars·arn·eq* land breeze
» *qudlirn* — » *quλ·eq* a lamp

B. *inung maqong tikitong aipa mirqosailing aipa kapiteling*
Gr. *inʊ·k marλuk tikit·uk a·p·a merqʊ·salik a·p·a kapitalik*
Translation: Two men are coming, one with a double jacket (Gr. a woolen jacket), the other with a foxskin jacket (Gr. kajak jacket). Boas, C. Esk. p. 621.

In addition to these forms there also seem to occur forms ending in the unnasalized stopped consonants:

Bf. *armgoaq* — Gr. *a·rnuaq* an amulet
Bf. *aqa·q* no; *aqa·qpoq* says no — E G. *e·qe* no

So it is difficult to decide in how great a degree this feature characterizes the dialect, if it is due to an old tradition

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and is constant in the words, or if it is merely in an embryo state. The present Labrador and Greenlandic dialects do not seem to have adopted it to so great an extent as the Baffin dialect. The same usage appears to be especially prevalent in the northwestern corner of Greenland (Smith Sound). — The first feature (*dj*, *tj*) binds the Baffin language to the Labrador language and separates it from the Greenlandic language*).

Other differences:

[*w*—*g*]	Bf. *oqautiva*	—	Gr. *oqautiqa·*	he tells it (to him), mentions it
[*t*—*λ*]	» *ingertune*	—	» *iʷη·erλune*	he singing
	» *majoartune*	—	» *majuarλune*	he coming (going) up
[*q·*—*rλ*]	» *maqong*	—	» *marλuk*	two

Still more dialectal differences would perhaps be detected on closer acquaintance with the Baffin dialect. But all in all the difference between the two languages on the opposite sides of the water does not seem to be much greater than the differences between several of the dialects within the coasts of Greenland itself.

With respect to the language in the northern part of Baffin Land, and around the Gulf of Boothia, Fox Basin, Hudson Bay**) or the sounds around King William Island, in

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*) A Greenlandic school-master who had an opportunity in 1889 to talk with some Eskimo from Baffin Land, who had come over to Greenland with an English ship (Perseverance), writes thus about their language in the Greenlandic periodical: "When I heard them speak, I did not understand a single word at first; I could hear that they spoke with a high voice and it sounded well; one of them said something to me, but what I did not understand of it was more than what I understood. Since they stayed here long, I gradually became accustomed to their language and began to be able to speak with them about various subjects. The reason why one cannot understand them at first is that they pronounce *s* almost like *j* and do not make it distinct." Atuagagdliutit 1890, No. 1, p. 2—3.

**) W. H. Dall's specimens of the language of two Eskimos from Repulse Bay, whom Capt. Hall had brought with him to Washington 1869, are too uncritical to be of any value here.

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other words, about the language of the western Central Eskimo, the information is too scanty for us to draw any conclusions about the peculiarities of these dialects.

With regard to the Eskimo at Smith Sound, Dr. Boas is of the opinion that they occupy an intermediate position. He is inclined to consider their arts similar to those of the Central Eskimo, while their language seems to be nearer to that of Greenland*). Very little is known about their language. The geologist R. Stein, who had an opportunity to hear it on his expedition up there, has given us some information about the phonetical character of this dialect, information which testifies to better phonetical insight than is usually met with in arctic explorers**). That is why it makes the more impression on me, when he maintains that the dialect, in addition to the usual unvoiced *s*-sound, has a voiced *s* [*z*] as in German "reisen". He gives several examples of it: *tasiuza* resembling a lake, *qablu·zen* resembling eyebrows (plur.), *uyazuhsu* (cf. Gr. *ujaraq* a stone), *iqa·zshsoa* "Meerenge", etc., all place-names, whose meaning, however, can be partly understood. This voiced *z*, then, is probably the middle stage on the transition from the *j* of the Labrador language to the West Greenlandic unvoiced *s*.

Just as in the Baffin language, the final consonants in the Smith Sound language are generally nasal; the words end in *ŋ*, *ɳ* and *n* instead of *q*, *k* and *t*. It is probably an *ŋ* that Stein describes when he speaks of a nasalized "Kehllaut" in the name which he first wrote *Imnˈa·rene* but corrected, after he had heard it oftener, to *Imnˈa·nganeng* (with the same sound in the final position as in the body of the word). I presume that the sound in question is the same uvular nasal (*ɳ*) as I heard in the two northernmost districts in West Greenland

*) Eskimo of Baffin Land and Hudson Bay, p. 355.
**) Cf. Introduction III, 1, Nr. 25—26.

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(*Oommannaq* and *Upernawik*), though there it occurred only in the middle of words not in the final position. About *dl* [λ·], Stein says that in rapid pronunciation this often becomes a *d* or *l*, a feature which reminds us of the Baffin language, East Greenlandic and the *kutät·ut* of the Upernawik dialect. — About *p* in words like *ipsuiso*, he remarks that it is pronounced with aspiration ("mit einem Hauch") like Greek φ; it is probably more nearly a fricative than a stopped consonant. — [*g*] seems to occur; instead of ρ, *q* seems to be used e. g. in the numeral for two: [*maqoŋ*], as in the Baffin language, cf. Labrador *magguk* [*maρ·uk*]. Taken all in all, there is reason to suppose that the language of the Smith Sound Eskimo is just as near to the language of the Central Eskimo in Baffin Land as to the dialects of *Upernawik* and *Ammassalik* (or perhaps even a little nearer).

The next station toward the west, from which we have copious information about the language, is the district around the mouth of the Mackenzie River (about 135° W. Long.) in the North West Territory of Canada. In this place, the Eskimo population seems to be relatively large. The French missionary Petitot has written a monograph about them, and in the introduction to his large Vocabulaire Français-Esquimau, he has described their language and grammar*).

Petitot's *ρk* and *ρkρ* I think must stand for [*q*]; his *ρ* (without the addition of *k*) corresponds to Greenlandic and

*) Especially in the years 1865—1870, Petitot made many excursions among them from the places where he was staying among the Tinné Indians farther south. Although he had not studied any Eskimo books beforehand, yet he succeeded in becoming so familiar with the language that he could understand a great part of it and write competently about it. Still, to be sure, there is no lack of naiveté and misunderstanding in his work; but it is original, and, what is more, the word-forms which he has reproduced generally make the impression of having been well heard.

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"*l* barré des Polonais"). This is surely due to a misunderstanding of Petitot's attempt to describe the Eskimo aspirated *λ*, which is a point consonant. — It is still more unfortunate that Henry seems to have misunderstood the meaning of *ρk*. It is true that he uses the symbol *h* in his system for a "gutturale sourde" along side of *χ* as the symbol for a "gutturale sonore"*), both sounds being "spirantes continues". The first of these two labels might very well be applied to my uvular [*ρ*]; the second sound I do not know from Greenlandic. Perhaps [*ρ*] does really occur in this dialect, though rarely, for instance in the word which Petitot writes *kaρρané* (on the top), cf. Gr. [*kaρ·ane*] (on or by the promontory). But then what becomes of the sound [*q*] in Henry's system? If *h* has the signification of [*ρ*] and [*χ*] of [*g*], there is no symbol in his system which can correspond to [*q*]. He seems to have misunderstood the meaning of Petitot's *ρk* and *ρkρ*, taking them to be combinations of two or three sounds. *k* and *r* (in Petitot *ρ*) both stand in the same line in his system as "gutturales", the first a "sourde momentanée", the second a "sonore vibrante continue". But this surely does not mean that *k* in Henry's system stands for the uvular [*q*]; if that were the case, the usual back-*k* would entirely lack a separate symbol in the system. About the *r* in the system, he says: "Cet *r* n'est autre chose qu'une variation dialectale, un simple renforcement que l'idiome des Tchiglit fait subir à un *k* primitif". As a conclusive reason for this is mentioned the fact that in other dialects *kr* is found as simple *k*, for instance M. *kρolépk* = Gr. *kotluk* = Labr. *kullek* (a lamp). Hence the whole mistake; for the Gr. and L. orthography here expresses exactly the same thing as the M. orthography (Petitot), but Henry did not know that in all old works (also often in new works) the symbol *k* is used at random now for [*k*] and now for [*q*]; the

*) Henry, u. s. p. 6. He compares these two sounds with the Arabic sounds ghain and ʿain, but I am not sure that he is right. His *r* he compares with Arabic rhayn.

word is in Greenlandic [$q^{l}u\lambda^{\cdot l}eq$]. Petitot's $\rho k\rho$ is a dilettante roundabout indication of the simple stopped consonant and cannot be mistaken by any one who is familiar with Eskimo pronunciation. This sound is not a special dialectal phenomenon, but the most characteristic consonant of the whole Eskimo language.

Henry gives in his system, in agreement with Petitot, the three voiced stopped consonants *g d b*. I do not believe that these sounds occur; it is more probable that the case is the same as in Greenlandic, namely that there are two kinds of unvoiced, unnasalized stopped consonants, one kind that is strongly aspirated and another kind that is only slightly aspirated. — He is surely right when he mentions an unvoiced palatal *č*, and he is possibly right when he mentions a voiced palatal *ǧ*; they must be compared with the *tj* of the Labrador dialect and the *dj* of the Baffin dialect.

Petitot writes *kivgaρk*, where S. Gr. has *ki*$^{w}\varphi\cdot aq$ (a servant); I presume the M. form is to be understood as [*kiwqaq*] with voiced fricatives. The same conditions apply to words like M. *killigvaρk* (elephant fossile) = Gr. *kiliφ·aq* ("the big cutter", a fabulous monster with six or ten legs, cf. Rink*)), M. *aρveρk* or *aρvaρk* = Gr. *arφeq* (a whale) etc.; here the M. dialect has a voiced fricative *w* as against unvoiced *φ* or *p* in Greenland. Thus it seems as if the voiced fricatives play a more important part in the dialect of the Tchiglites than in Greenlandic. M. *gw rw* correspond to Gr. [$\varphi\cdot$ $r\varphi\cdot$]. — [χ] does probably not occur. That short [*q*] occurs seems to be certain from such a word as M. *niyeρk* (vent de l'est et du nord-est), which certainly must correspond to S Gr. *niqeq* (south wind), Up Gr. *niŋeq*. It is worth noticing that Petitot in some cases seems to have used the symbol *ρ* (with which he otherwise generally indicates the uvular [*r*]) to indicate *q*. At all events it often

*) Tales and Trad. p. 48. — Eventyr og Sagn. Suppl. p. 190.

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occurs in words where I should expect from Greenlandic to find this sound, for instance: M. *uvaρut* = S Gr. *uvaqut* (we); M. *kiρut* = S Gr. *kigut* (tooth); M. *-maρit* = S Gr. *-magit* (verbal suffix) etc. — For the nasal consonants, Petitot has the usual symbols; I find no suggestion of a [ŋ].

The final consonant in the words is generally *q*, *k*, *t* or *p*; only in connected discourse do *η*, *n* or *m* occur between two vowels.

Just like the Labrador Eskimo, the Mackenzie Eskimo also uses *j* in a large number of those words where the Greenlander pronounces *s*. As examples I may give:

[*j*—*s*]	M. *mikiyoρk* little	—	Gr.	*mikiso·q*
	» *nakyoρk* good; strong	—	»	*nakʊ·soq*
	» *añiyoρk* large	—	»	*aŋiso·q*
	» *iyik*, plur. *iyit* eye, eyes	—	»	*ise(q)*, *isit*
	» *kρéyuk* kindling wood	—	»	*qisuk*

It is especially striking to meet with initial *tç* everywhere here where Greenlandic has simple *s*. Ex.:

[*tç*—*s*]	M. *tçikρeyneρk* the sun	—	Gr.	*seqineq*
	» *tçiun* ear	—	»	*siut*
	» *tçivikitoρk* not lasting long; quick	—	»	*sivikit·oq*
	» *tçuna* what	—	»	*suna*
	» *tçule* yet	—	»	*sule*
	» *tçaoneρk* bone	—	»	*sa·wneq*
	» *tçitamat* four	—	»	*sisamat*

etc. in most cases in the beginning of words. But also in the middle of words:

[*tç*—*s*]	M. *atavtçiρk* C. *atayak* } one	—	Gr.	*ata·ʷseq*
	» *piñatçut* three	—	»	*piŋasut*
	M. *neqetchidjoaρk* let someone eat, give him something to eat	—	»	*nerisis·o*
	» *tutçayoρk* I hear something, hush!	—	»	*tusa·soq*

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M.	*illiptçi* you	— Gr.	*iliʷs·e*
»	*kitçime* alone	— »	*kisime*
»	*itçimayoaρk* to sit, to be located or settled	— »	*is·iamasoq*
»	*apkρutçineρk* path	— »	*aʷq·usineq*
[*tj—ts*]	» *nudjiát* hair of the head	— S Gr.	*nutsät*

How is *tç* to be taken? V. Henry takes it everywhere to be a "palatal" *s* [ç] or, as I should designate it, [š]; from Greenlandic, too, I know a palatal (postpalatalized?) *s*, the sound which I write [ç]. But I am inclined to think that Petitot in reality has heard a sound-combination, a *tš* or something like that with palatal *t* + *š* (or ç), for in the more western regions too we often find words in which these consonants occur together (initial *tsh*, *tsch*, also *ch*, cf. Barnum Inn. Lang. pag. 2). But now the sound *dj* as for instance in *nudjiät*? I should have taken it to be a corresponding voiced *dž*, if Petitot had not separated the two letters *dj* from the following *a* by an *i*; this *i* is written purposely to prevent *dj* from being pronounced simply like *dž*; if the *d* is produced in the same way as *t* in Greenlandic, it is almost interdental, and here perhaps palatalized too; then the following *ji* is more apt to be the voiced front fricative [*j*] than the blade-point consonant [*ž*].

If we now collect the characteristic features of the dialects of Mackenzie, Labrador and Greenland, the Labrador dialect seems to stand between the other two with respect to the sound-system, but yet it resembles South Greenlandic and Middle Greenlandic most, especially if the unvoiced bilabial [φ] should prove to occur in Labrador; the occurrence of the other three aspirated fricatives is certain at any rate. But the Labrador dialect has also some phonetical features which remove it from South Greenlandic and draw it over toward the Mackenzie dialect, especially the occurrence of *j*, where Greenlandic has [*s*], and of *tj*, where the Greenlandic sound has branched into Middle Greenlandic *t·*, South Greenlandic *ts*, and,

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at least in some few cases, of *wq*, where South Greenlandic has *φ*; likewise the frequent occurrence of the sound-group *iw*, where Greenlandic has *ij* or *üj*. Among the differences which set a sharp division between the Mackenzie and Labrador dialects the occurrence of initial *tš* (*tç*) in the Mackenzie dialect, where Labrador, just like Greenlandic, has merely *s*, is of especial importance; besides it is pretty sure that the Mackenzie dialect lacks [*χ*], which occurs in Labrador (Up. Gr. has *k* here). More peculiarities will be seen later, which connect the Labrador dialect more closely with Greenlandic. — With respect to the *s*-sounds, Up Gr. stands on the same side as Middle Greenland and S Gr., even if it otherwise stands apart from them; the Baffin dialect has *j* (*dj*) here instead of *s*; with regard to the remaining fricatives, Up. Gr. stands isolated, or it may possibly approach the dialect of the Central Eskimo, which is little known. — Several other differences and agreements between all these dialects may be suspected but they are not yet sufficiently clear.

Now we come to Alaska. All authors agree that there are a large number of different dialects along the coasts of this large peninsula, especially along the western and southern coasts. The material which is to be had for a comparison of these dialects is perhaps rather abundant compared with what we have for large portions of the Central Eskimo, but yet when we come to use it for exact investigation, we find it very fragmentary and difficult to unravel. The idioms are presumably interwoven here as they are in the districts farther east, so that we must make a qualitative choice of phonetical criteria to be used in determining the dialectal boundaries.

The northernmost point on the coast of Alaska is Point Barrow (156° W. long., 71° N. lat.). Between this place and the Mackenzie River, there is a large extent of territory which is inhabited probably only by a few Eskimo, about whose language nothing is known. A copious list of words from the

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Point Barrow Eskimo has been given by Ray in the report of the international polar expedition to this place in 1885. As in many of the later American works containing specimens of the native languages of the new world, the words in this list are spelled in accordance with the standard alphabet recommended by the Bureau of American Ethnology (Smithsonian Institution) for use in recording Indian languages*).

Ray employs the symbol *q*, as for instance in *pe'qsu* (drifting snow) to designate the uvular fricative [*r*], cf. Gr. *perso-*. The uvular stopped consonant [*q*] is not indicated in any other way but by the usual *k* — for I cannot believe that this sound does not occur in this dialect; the *k*-symbol undoubtedly covers both this sound and the usual back stopped consonant**). Therefore I think I am justified in reading it in such words as N. Al. *kákogo* (when, in the future), *káblun* (eyebrow) and perhaps also in *úksuk* (fat), which in form almost, in meaning, quite correspond to Gr. *qaquqo*, *qáwλo* (plur. *-ut*), *orsoq*, and on the whole in all the many words where it is to be expected in accordance with the Greenlandic and the Mackenzie dialects. He seems to use the symbol *û* partly to indicate an indistinct *a*, which is sometimes a short uvularized *a*, partly in all pro-

*) This alphabet is unfortunately rather deficient as a means of designating the sounds of the Eskimo language. It lacks special symbols for three of the unvoiced fricatives, namely for [*ρ λ φ*]. Its symbol *q* has to represent two different sounds, namely the two consonants in German ich and ach; my [*χ*], lies between both these sounds. There is no symbol for the corresponding voiced back fricative (*γ*). Nor is there any symbol for the uvular stopped consonant [*q*] in my work; the symbol x indicates the Arabic ghain, which is the voiced(?) uvular [*r*]; the symbol *r* is used both for the English (point) *r* and the French (back) *r*. *ú* indicates the vowel in English but; there are no special symbols for [*ø*] and [*ö*] and other vowel-shades.

**) As was customary also in the Labrador and Greenlandic orthography all the way down to Kleinschmidt's time (about 1850). — In Wells and Kelly's Vocabulary from NW. Alaska, there is the same ambiguity in the letter *k*, but here, however, the reader's attention is especially called to this double use of the letter ("*k* takes the place of *q*" p. 66).

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bability also to indicate an uvularized *e*. There is no reason to doubt the occurrence of most of the sounds of the Greenlandic sound-system. The only difficulty is connected with those sounds which have shown a tendency to vary in the dialects previously examined, first and foremost the fricatives (the open consonants). With respect to the occurrence of voiced stopped consonants — they are always given as existing — I am rather inclined to believe that where they are given, they are only meant for unaspirated unvoiced stopped consonants ("unvoiced *b*, *d*, *g*"). — I consider it certain that Ray intended his symbol *x* to stand for the uvular [*r*] in examples like

NAl. *amáxo* wolf — Gr. *amarʲoq*
» *taxaio* salt — » *tarajoq*
» *áxlo* killer-whale — » *arλuk*

There might be some reason to suppose that when he uses this symbol in *noxa* (caribon, fawn), it here stands for the aspirated, that is unvoiced fricative [*ρ*], for Gr. has *noρ·aq*. If that is the case, we should expect the same conditions in the word that corresponds to Gr. *taρ·aq* (a reflected image, a shadow-picture), but here Ray has NAl. *tágaⁿ*. Is this an orthographical whim, or is there really a difference of pronunciation? Somewhat similar is the case in NAl. *nûg'lug'ruã* (goose), which corresponds to Gr. *nerλeq*, plur. *nerλerit*; we might have expected x instead of *g'*. — Does the unvoiced fricative [*χ*] occur? It is found in Greenlandic *tiχ·aq* (a he-seal); for this word, Ray has NAl. *tíxgûñ* which I read as [*tirqaη*] or [*tirkaη*]. Neither is there any urgent reason to assume the *χ*-sound in NAl. *sígo* (beak or bill), which in Greenlandic has the form *siχ·uk*. For the present at least I shall assume that the sound is not found in this dialect. — The unvoiced fricative [*λ*] undoubtedly occurs, cf. NAl. *kódlõ* (lamp) — Gr. *quλ·eq*; NAl. *túd'liñ* (white billed loon) — Gr. *tʊ·λ·ik*. — The unvoiced fricative [*φ*] does not seem to occur. Ray writes NAl. *ák'bwûk* (whale), cf. Gr. *arφeq*; NAl. *séakbwûk* (sea-pigeon) — Gr. *serφaq*

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(black guillemot). Cf. NAl. *aibwûk* (walrus) — Gr. *a·weq*. I suppose *bw* is intended to indicate a loosely articulated bilabial somewhat similar to *w* — accordingly a voiced sound.

Thus on the whole the sound-system of this dialect agrees with the sound-system of its neighbor to the east, the Mackenzie dialect.

With respect to the forms of the words, those words in the Point Barrow dialect whose final sound is consonantal very often end in nasals, a feature which reminds us of the Baffin dialect. In the Mackenzie dialect, there is a blending of the two tendencies; many, perhaps most, words here end in *q* and *k*, just as in the L. and Gr. dialects, but final *n* always occurs in those words which in the other two dialects end in *t*. In the NAl. dialect we have *ujarûñ* [*ujaraŋ*] (stone), in Gr. *ujarak*; NAl. *imuñ* (milk) — Gr. *im·uk*; NAl. *tugáliñ* (narwhale), Gr. *tu·ġalik*; NAl. *kamotin* (sledge) — Gr. *qamutit*, etc. This peculiarity, however, does not appear in all the words ending in *k* and perhaps not in any of the words ending in *q*; we find for instance NAl. *imeak* or *imûk* (water) — Gr. *imeq* or *imaq*, NAl. *kumûk* (louse) — Gr. *kumak* etc.

It is striking how many words have been taken down from this dialect in the form of vowel stems (ending in a vowel), which in Greenlandic end in *q* or *k* in the nominative. As examples may serve such words as NAl. *k'ûttû* (wooden trapdoorway) — Gr. *kat·ak*; NAl. *au* (blood) = M. *awk* — Gr. *a·wk*; NAl. *pau* (sod) — Gr. *pa·^{w}q*; NAl. *mûkqlûkto* (child) — Gr. *merlertoq*; NAl. *mûttakto* (naked) — Gr. *mat·artoq*, etc., thus all the words ending in *-to(q)*, accordingly all the adjectival participial forms. Several examples have already previously been given. This feature is so persistent that it is almost difficult to find examples of words in this dialect that end in the uvular which is so characteristic for the Greenlandic and Mackenzie dialects. And those cases which can be shown are only valid on the condition that the *k* of the orthography stands for [*q*]

in addition to the sound that it generally stands for in our languages.

At Point Barrow, the northern coast of America makes a curve toward the south in the direction of Bering Strait. There is much to indicate the appearance of new phonetical tendencies along these coasts.

As far as the northwestern part of Alaska is concerned (around Point Hope), I owe a good deal of my information to Well's and Kelly's Collection of Words. As for the southern part of the west coast two grammars are known to me: A. Schultze's "Grammar and Vocabulary of the Eskimo Language" etc. (1894) and F. Barnum's "Grammatical fundamentals of the Innuit Language as spoken by the Eskimo of the Western Coast of Alaska" (1901). The latter, which also contains a vocabulary, deals especially with the Eskimo language that is spoken along the coasts of Norton Sound, the delta of the Yukon River and the mouth of Kuskokwim River, and it contains a good deal of interesting information about those dialects which may also serve to cast new light on the eastern dialects. But unfortunately the phonetical continuity with the eastern dialects is broken off just here at a couple of critical points, or rather I cannot see the continuity. This is due to the fact that in spite of the great number of symbols that he uses, the author does not succeed in giving the uninitiated a clear idea of the actual pronunciation of the language, simply because his description of the phonetical value of the symbols used is so imperfect. Such imperfection was of less significance when it was the nearer dialects that we had to deal with than it is in the case of this distant dialect. Although undoubtedly a pure Eskimo language, yet this Alaska dialect contains so many words of unknown or unrecognizable origin that it is often difficult to find certain parallel forms corresponding to Greenlandic words.

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Barnum had a good opportunity to become thoroughly well acquainted with the language, having stayed among the natives eight years in the capacity of missionary. In publishing his large store of material, he has given much attention to distinguishing between the different speech-sounds, and he operates with no less than about 70 symbols for the consonants (including consonant groups) and 18 symbols for the vowels (and diphthongs). So one would expect that no essential shade of sound in the language had escaped his observation. Among the many consonants that he gives, there are 3 or 4 symbols intended to indicate "gutturals" (uvulars), not including, however, the symbol *k*, which is to be pronounced "as in English" or as in French quart. "This is the most-used letter in the language", he says. He calls his symbol *q* "the common guttural", and he uses it only before another consonant, as in SW Al. *ēmăqˡpēk* (the sea) — Gr. *imarpik* (the real or the great sea); so his *q* corresponds to my [*r*]. I presume it is also the same sound that he indicates with an *r*; but he uses this symbol only after a consonant, as in SW Al. *katunrak* (son) — Gr. *qitornaq* (child), or between two vowels as in SW Al. *mărīˡyak* (mud), where *ī* = [*a·ɪ*] — Gr. *maρ·aq*.

The sound [*q*], on the other hand, he indicates by means of a *k* that is supplied with a special diacritic mark (here ʀ); he speaks of it as "a strong rasping guttural", but he rarely uses it; he has it for instance in the word *kĭkʀtam* (p. 270) — Gr. *qeqertap* (the island's), in the suffix SW Al. *-ʀătōă* (I have) — Gr. *-qarpoŋa*, e. g. SW Al. *ūchĭngˡʀătōă* (I have a load) — Gr. *useqarpoŋa* etc.

It was at this point that I became puzzled and surprised, so much so that I had to give up. In investigating the dialects which I have previously taken up, I never felt any uncertainty because there was no special symbol for the uvular stopped consonant (tenuis); I was already so accustomed to the double use of the symbol *k* in the elder Greenlandic and in the Labra-

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dor orthography. But here, in SW. Alaska, I am confronted with an orthographical system in which there are undoubtedly separate symbols for the uvular consonants, among others, for [*q*] the most characteristic and most used of the East Eskimo speech-sounds — and then how does it appear here? The symbol that is used to indicate it is, at all events, extremely rare. It never occurs as a final just as little as the symbol for [*r*]; in the final position we always find *k*, as in SW Al. *pūyōk* — Gr. *pujoq* (but SW Al. *pūyōqkak*, "what will be smoke", a term for gunpowder, where *q* = [*r*]? or *qk* = [*q*]?). I shall give some words that I have chosen at random:

SW Al.		W Gr.	SW Al.		W Gr.
kīy'ak	boat	*qajaq*	*akkizhzhigik*	ptarmigan	*aqiç·eq*
kŏln	ten	*qulit*	*kăpŭk*	foam	*qapuk*
kavlut	brow	*qa^{w}λ·ut*	*tăkăk*	vein	*taqaq*
kēm'uqta	dog	*qim·eq*	*tōkōnăk*	death	*toqo*
kēn'aka	my nose	*qiŋak·a*	*ă'tăk*	name	*ate'q*
kēku	clay	*qeqoq*	*kănīq'tŏk*	it snows	*qăn·erpoq*

If *k* is in none of these cases intended to indicate the uvular stopped consonant, then the Alaska language must certainly sound very different from Greenlandic. Furthermore this supposition would also lead me to assume that the NW. Alaskan and the N. Alaskan dialects, where also only the symbol *k* is used, likewise made only little use of the sound [*q*]. So if I had started on my investigation from the west instead of from the east, the Mackenzie dialect would be the first where this sound played an important part.

There is not the slightest indication in Barnum's work that *k* might have any other sound-value, than that which it has, for instance, in English. That the author, after having lived so many years where this language is spoken, should have been unable to distinguish between the sounds [*k*] and [*q*] is scarcely credible. Yet, for the present, I shall wait and see

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if anything should happen to turn up later that may help to clear up the matter. If it should be established that this uvular sound is almost foreign to the South West Alaskan dialects, so that they, so to speak, rest on a different basis of articulation from that of the other Eskimo dialects, it will be conclusive for our construction of the phonetical development of the present Eskimo dialects.

§ 33. Assimilations in the East and in the West Eskimo dialects. Through that insight which our previous investigations have given us into the phonetical character of the different Eskimo dialects, we may now feel enabled to undertake a relatively reliable valuation of certain great but constant differences between them, which appear in the orthographical reproductions of the same words from different districts.

With Greenlandic as our starting-point, we first come to the following groups of marked differences between the Labrador dialect and Greenlandic (the brackets, as usual, enclosing my phonetical transcriptions, which, on comparison with the specimen words from the more distant dialects, will show what sound-values I assign to the orthographical symbols in the specimens):

Gr. L.

[$r\lambda$ — rg] Gr. *iŋerλawoq* — L. *ingergavok* moves forward
Gr. *qimerλo·rpa·* — L. *kemmergova* regards it

[$r\lambda$ — $\rho\cdot$] Gr. *marλuk* — L. *magguk* two (gg = [ρ], cf. Bourquin Gr. § 6, note)
Gr. *orλuwoq* — L. *ochovok* falls down

[$r\lambda$ — $\chi\cdot$] Gr. *arλa·* the other one — L. *agga* two
Gr. *narλuwoq* — L. *naggovok* is even

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[$w\lambda$ — gw] Gr. *qu$^{w}\lambda\cdot e$* — L. ***kugve*** a tear
Gr. *i$^{w}\lambda\cdot it$* — L. ***igvit*** those

[λ·—gw] Gr. *qu$\lambda\cdot$arterpa·* — L. ***kugvartipa*** tucks up his trousers (so as to be able to wade)
Gr. *qȧ$\lambda\cdot$eq* — L. **kagver-*

The last example is not quite certain, but it is probably in place here.

Greenlandic *qa$\lambda\cdot$eq* means the topmost or outermost part of anything, thence Gr. *qȧλiuwoq*, is topmost or outermost, lies on top, *qȧ$\lambda\cdot$erpa*, covers it up

Labr. ***kagvirpok***, he has gone up on a mountain, or clouds have come up, ***kagvirtipa***, he has covered it.

That these differences between the two dialects are deeply rooted in the language becomes evident on comparison with the West Eskimo forms of these words, in so far as they are preserved and written down:

Gr. *marλuk* — C. *malρok* — M. *mállep̣ok* — NAl. *mádro* — SWAl. *mălrūk*

The NAl. form is remarkable, but may perhaps be explained by assuming that it is an awkward attempt to reproduce an indistinctly apprehended [λr], a sound-group which is very common farther south on the coast of Alaska. — Cf. the following form from the same place (Point Barrow):

NAl. *adráni* anciently, which apparently is to be compared with L. *achāne* last year [$a\rho\cdot a\cdot ne$], and which, to judge both by the form and the meaning, could be related to the already mentioned Gr. *ar$\lambda a\cdot$* the other one of two or another of several, in the locativ *ar$\lambda a\cdot n\cdot e$*.

Thus it appears from these forms that the West Eskimo words all agree in having λr instead of the $r\lambda$ which is found in Greenlandic. The case is the same in the following words:

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Gr. Al.
[$r\lambda$ — λr] Gr. *narλuwoq* { — SW Al. *nalth'kĭqtok* it is straight
— » *năłthŏk'fŏk* straight above
» *arλa·* the other one (of two) — » *ălth'thrŏkū* next year

The orthography in these Alaska forms seems distinctly to indicate that we have to do with an unvoiced, aspirated [λ] before the uvular consonant.

Still another word where I find the same conditions [$r\lambda$ — λr] is:

Gr. *amerλartut* many — SW Al. *amthlertūt* (Barnum § 798)

N Al. has *amadráktu* as before *madro*, and N Al. *amadráñmût* when there was plenty, corresponding to Gr. [*amerλ·ă-m·ăt*]. The word is not found in the Labrador language, at all events, not in the dictionary.

As for the other words, which contain a labial, I can give the following parallels:

[$w\lambda$ — λw] Gr. *i^{w}λ·it* — M. *illuit* — N Al. *iluit* — NW Al. *il'we* SW Al. *łpit* or *ilch'pit* thou

[ws — $s\varphi$] Gr. *i^{w}s·aq* the other day — N Al. *isfa* — SW Al. *ĕchē'hwak* [*itšiφ·ak*]? formerly.

Also Gr. *quλ·arterpa·* (lifts it up in the air; lays or hangs it higher up) seems to be connected with SW Al. *kulvara'ka* (I put it up high) and can have come of a form **qu^{w}λ-*. If this is the case, then it is also probable that the above mentioned word Gr. *qaλ·eq* — L. *kagver-* is to be connected with SW Al. *kălvăq'tăkă* (I lower it), *kălvăg'yărăk* (the outer approach or entrance to a native house), *kălvăq'tōă* (I enter a house), so that the original form seems to have been **qawleq*; but the meanings have become far removed from each other in the two dialects.

Hitherto I have taken up only such cases where Greenlandic and the Labrador dialect apparently have gone separate ways. In all of them, it has been a question of the existence or non-existence of an *l* (or *s*) in connection with an uvular or

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a labial. On looking to the more distant dialects for some help in explaining the origin of these differences, I found that *l* was commonly found in these words everywhere except in the Labrador dialect; but the matter also proved to be more complicated than I had at first supposed. For the West Eskimo forms presented a new, third type, where those pairs of consonants that occur in the Greenlandic forms are found in the reverse order; and as against the Greenlandic homogeneous consonant-combinations (*rλ*, *wλ*, *λ·*), the Labrador dialect has heterogeneous assimilations.

To which division of the language is this last dialect to be assigned? Its [*ρ*] and [*χ*] (p. 229) may just as well have come of *rλ* as of *λr*. The question must be decided through such cases where the usual process of assimilation has not been carried out and where the original form has therefore not become obscured. As against the constant Greenlandic [*rλ*], there are, in all, three formations in the Labrador dialect [*rg*, *ρ·*, *χ·*]. I feel convinced that these formations were originally quite similar and that they only indicate different stages of development. As long as nothing points to the contrary, I shall assume that the difference between them has developed within the Labrador dialect itself in this way: an original group consisting of *r* + a front consonant (presumably *l*), has first passed into *rg*; this has further become assimilated in some words, either directly, partly to *ρ*, partly to *χ*, or else in every case first to *ρ*, which has then been fronted in some few words and changed to *χ*. But the uvular was the first of the two consonants; the inversion has taken place; so in this particular, the Labrador dialect stands on the same side as Greenlandic.

On the other hand, in its treatment of the group labial + *l* (or another consonant), the Labrador dialect leans in the direction of the western dialects. The metathesis which has taken place in *wλ* etc. in Greenlandic does not appear to have occurred in Labrador. — Yet this bond is not nearly so strong

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and broad as the bond which unites the Labrador language to Greenlandic. That is shown by the following examples, which are analogous with those previously mentioned (uvular + another consonant).

I shall give some examples of series of words where the two eastern dialects have gone the same way, so far as can be seen from existing forms common to both.

In the examples that I give first, both dialects have strongly assimilated forms, so that it cannot be seen directly if metathesis has taken place before the process of assimilation or not.

Gr. L. NAl.	Gr.	L.	NAl. (West Eskimo)
[ʕ· — ǧj : ǧs — χρ]	*us·uk*	*uguk*	*úg'ru* bearded seal
	is·uk	*igsuk* semen virile	*i'ggru* testicles
	qus·uk	*kogjuk*	*kúg'ru* swan
	tamas·a	*tamadsa*	*tamuz'ra* is here
	na·q, plur. *nás·ät*	*nakset*	*nazruk* (Kelly) abdomen

When we remember the previously cited Labrador forms with the group [*rq*] and its assimilation to [*χ*], we realize that it is possible that these last mentioned East Eskimo forms too may have contained an *r* (before *g*, *j* or *s*) and have had a common origin in a group where the usual metathesis is carried out. This will be confirmed later by some similar cases.

Even more distinctly do we see the nature of this East Eskimo bond of relationship in the following examples:

Gr. & L. Al.
[*rn, rŋ—nr, ŋr*]

Gr.	L.	SW Al.
qitornaq child	*kittorngak* child	*katunra* (Barnum)*) son
orna his armpit	(*unninga*)	*ūn'kă* armpit

*) The Eskimo of Port Clarence, Alaska: *qitungaq* (boy), cf. Boas in Journ. Amer. Folk-lore VII, p. 207.

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Gr.	L.	SW Al.
to·rnaq a spirit	*torngak*	*tungˈralik* sorcerer, one who has a tungra
pinˈit straw in the boots	*perngit*	*pēnăqˈkak* grass dried for use in native boots
kiŋorna that which follows after something else, after that, since	*kingurnga*	*kĭnggnunrĭqtōrăˈkă* I go after him
kiŋornup·ak·a I have inherited them (things)	*kingormgutivaka*	*kĭnggnunrăqtōrănˈkă* I go in search of those behind (i. e. lost ones)
serniqa· protects him	*serngnigiva*	*chĭnggnăqˈkă* I kiss him (embrace him)

In these words the consonant-metathesis has necessitated changes in the preceding vowel; when the two consonants change places, the uvular consonant finds itself immediately after the vowel, which then, according to the phonetical tendencies in Greenlandic, is uvularized. We observe two stages of vowel change:

i > *e* > e Al. *nimra* — Gr. *nerma* (its) lashing
u > *o* > ɔ » *unra* — » ɔrna (his) armpit
a > *a* > a » *malruk* — » *narλuk* two

Now it might be expected that this vowel-change could be used as a criterion of historical-linguistic value.

I shall try to show, however, that in certain series of words, metathesis may have taken place, whereby an *r* has penetrated into the first syllable, yet without any trace of it to be seen in the vowel, the *r*, on the contrary, having entirely disappeared and become assimilated with the neighboring consonant.

I think I am able to produce historical testimony from the oldest records of the Greenlandic and Baffin languages to prove that a metathesis of this kind has once taken place in two words, which in the present language at Davis Strait show no

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trace of an original uvular. They are the words for eye and hand.

W Gr.	[s·] *is·e*		— L.	[j·]	*îje*
»	[ç·] *aç·ak*, plur. *aç·a·ᵗt*		— »	[χ·]	*aggak*

These words are thus spelled by Paul Egede in his Greenlandic Dictionary from 1750: *irse* eye, and *arkseit*, hand, fingers.

In Frobisher's list of words from Meta incognita (Baffins Land), where he was in 1576, these words are found in the forms: *arered*, eye — *argoteyt*, hand (or rather: thine eye — thy hand).

This manner of spelling these words is scarcely accidental. Egede uses it in still more words; in all of them the case is the same: in Greenlandic and in the Labrador dialect, the uvular has now disappeared, but it is still found in the westernmost dialects.

Gr. *is·e* (1750 *irse*) eye — L. *îje* — M. *iyik* — NAl. *ídin* and *i'ddrûñ* — NWAl. *ite* view; *e'rit* eye; *e'gra* eye of a needle — SWAl. *iq'kă* my eye; *ē'kă* or *ēq'kă* my eyes — Sib. *e'ye* eye

Gr. *aç·ak*, plur. *aç·a·ᵗt* (1750 *arkseit*) fingers — L. *aggak* M. *adjipapk* — NAl. *ádrigai* his hand — NWAl. *ahregit'e* — SWAl. *ăttrĭlnŏk* the ring-finger

In all the Alaska dialects, then, there are forms containing the uvular sound in the word-stem itself. It seems to me to be highly probable that in the old East Eskimo forms that have been preserved by Egede and Frobisher, we have a reminiscence of this sound, but with an indication that here in the east metathesis has taken place, while the original combination of the consonants is preserved in the westernmost districts.

The Mackenzie dialect is partly connected with the East Eskimo dialects, partly — and most closely — with the Alaska

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dialects. I take the given form for the word "hand" in this dialect to be a reproduction of the sounds [*adžiraq*], the NAl. form to be [*atriga·ɪ*] or rather [*atjriga·ɪ*]. A comparison of the Alaska forms for the word "eye" gives a basis **itjr-*, while beside this there must have been a shorter basis **id-* or **it-* for those western forms where there is no uvular at present. In the Mackenzie form with [*j*], and in the present eastern forms, every trace of the uvular has been lost.

In this connection it is interesting to turn back to the above mentioned little series of examples: Gr. *uç·uk*, L. *ugjuk*, NAl. *úg'ru*, etc. (p. 233). If the uvular in the words for eye and hand was at one time present in East Eskimo, why should it not also have been present at about the same time in the words of this series? Frobisher does not mention any of these words, but the forms which they had at that time may perhaps be reconstructed after the analogy of the two words that he has written down. His mode of spelling these words, to be sure, does not exactly agree with modern principles for phonetical spelling. If I had been along on Frobisher's expedition, I should perhaps rather have spelled the word that he records in the form *arered*, in this way **erjret* or *erjit*, and the word that he records as *argoteyt*, as *[arɢotɛ·t]*). In the same dialect, then, the words under consideration have probably had the forms *[*urgu irgu kurgu*], or perhaps with [*rj*] at a later stage. This consonant-group has then found itself in a very forced and unnatural position between two high vowels; the vowel-change has not taken place, or if it has taken place, it has only been temporary; the consonants have changed instead and have passed into [*ɢj*] in Labrador, into unvoiced [*ɕ·*] in Greenland. Cf. also Gr. *is·e* < *irse*, L. *ɾ·je* (or *ij·e*) < **iɢje* < **irje*.

*) Present Baffin-dialect: *agoq*, plur. *again* (hand) and *agi'qpit* your hand's, cf. F. Boas In der Eskimo Dialect des Cumberland-Sundes (Mittheil. Anthrop. Gesellsch. Wien, vol. XXIV, 1894).

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A closer study of the dialects will probably lead to the discovery of more examples of these or similar sound-changes. I think I have produced enough of material to show that it is probable that at a certain point in the history of the Eskimo language, in certain words in the East Eskimo dialects, a characteristic metathesis has taken place, whereby an *r* (in Greenlandic also *w*) occurring in one of the last syllables in a word is drawn back toward the beginning of the word. In Greenlandic, this shifting has generally entailed a corresponding change in the vowel of the word-stem, if not immediately, at least in the course of time; the only exceptions are those cases where the *r*- or *w*-sound has been absorbed in assimilation with the neighboring consonant. In the Labrador forms, there are distinct traces of the same metathesis, even if the traces are not quite so well preserved here. To sum up the results, we may say that although the Greenlandic and Labrador dialects in their present shapes completely agree only in a certain number of cases, while in the remaining cases, each one has its own characteristic groups, yet these two dialects are decidedly on the same side as against the type which we find in the extreme west in the corresponding words.

I have no doubt as to which of these three types (*malruk* — *maρ·uk* — *marλuk*) is the oldest. It is in the west that we find these words in their original forms. The basis for the three types is a form that ends in, or contains two consonants of which the first is some other consonant than *r* (or *w*), while the second is a sound related to *r* (or *w*). After the two chief branches of the original Eskimo language had separated from each other, the Greenlandic and Labrador dialects (to continue with these two) probably went the same way with respect to the metathesis of *lr* [*λr*], whereas they have partly gone separate ways with respect to the further development of the forms resulting from the metathesis. The relation between them may be tabulated in this way:

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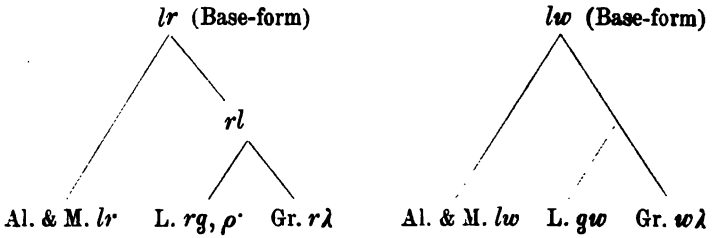

I shall now proceed to give a series of examples of a sound-assimilation which takes place under conditions exactly corresponding to the conditions for the metathesis, and which will therefore throw a strong light back upon the examples which have been given for the metathesis.

Gr. [*rq*]	L. [*rq*]	M. [*tq*]
erqa his anus	*ittervik* entrance	—
merqoq a hair	*merkok*	—
merqut needle	*merkut*	—
merqulik shaggy	—	*mitkpoyoapk*
se·rqoq knee	*sērkok*	—
serqorpoq it cracks	*serkorpok*	—
qerqa the middle of it	*kerka*	*kpitkpa*
eqaluk salmon-trout	*erkaluk*	*itkpaluk* fish
terqiaq a shade for the eyes	*terkejak*	*titkpepk*
erqerqoq the little finger	*erkekok*	—
arqa his name	*attera*	*atkpa*
arqit names	—	*atkpeit*
a·rqatit thy mittens	—	—
	takkek the moon	*tatqaq*
narqa the floor of a house	—	*natkpo* fond du barque
(*qa·rqa* bone plate on the end of the harpoon shaft	*kakkoak*) ?	*katkpok* bone arrow
qarsoq arrow	*karkjok* ?	
parqa its marrow (*pateq* marrow)	*pakkut*	—

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In these examples, we have in reality only a special form of the phonetical phenomenon treated above. The western dialects — including the Mackenzie dialect — show an unassimilated combination of a front consonant with the uvular *q* (written *k*); in the eastern dialects, these consonants have become assimilated*). *tq* has here passed into *rq*, i. e. [$^{r}q^{\cdot}$],

*) In the Greenlandic [*to^{w}q·it*] the plural of [*tupeq*], a tent, the remains of the *p*, which have been preserved, have hindered the uvularization of the vowel. Yet I have also heard [*tɔrqit*] in Greenlandic, with complete loss of the labial. — The Mackenzie Dialect has *tuppkpëit*.

N Al. [*tq*]	NW Al. [*tq*]	SW Al. [*λq*] [*tq*] etc.
i'tka vent	—	*ĭtl'hră* his entrance
mitko	*mit'koon* a hair	—
—	*mit'koon* needle	*min'kūn* needle
—	—	—
s'itkwuña		*chĭs'kōkă* my knee
—	—	*chĭng'kŏk* it crackles
—	—	—
—	—	—
—	—	—
yiûkutko	*etik'kook* the little finger	*ikkilthkoa* his l. f.
atka	*ot'kuh* name	*ăt'ră* his name
—	—	—
a'itkati	*otkot'eka* my mittens	—
tû'tkûñ	*tatkeh* moon	—
—	—	*nătrok* boot sole
—	—	*kalth-ki'djet* shot (for shooting)
—	*pot'ka* its marrow	*pătŏk* marrow

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with uvularization of the preceding vowel and with the result that one long consonant takes the place of two short ones.

Yet there is an eastern dialect which is at an older stage, since the uvularization of the preceding vowel has not taken place. In the dialect of Baffin Land, as it is reproduced by F. Boas, *iq*, *ir* and *uq*, *ur* frequently occur in the stems of the words where Greenlandic and the Labrador dialect have *er* (*eq*) or (*oq*) *or*. I shall give a number of examples of this.

Bf. [*iq ir iç*]	Gr. [eq er]	L. [eq er]
si'qoq knee	*serqoq*	*sērkok*
irdning, irdnēing son	*erneq*	*ernek*
irdnivoq she gives birth to	*erniwoq*	*ernivok*
iqtsaq temple	*ers·aq* back part of the cheek	*erksak*
iqtsirpā'q cheek tooth, molar		
pi'rtsirpoq (the snow) drifts	*perserpoq*	*perkserpok*
irnaut train-oil	*erna·wt*	*erngaut*
irmirsia'qdjung a cup	*ermuseq*	*ermgusiārsuk*
irmadlin a piece of skin used to lay in the bottom of a kayak	*ermalisaq*	*ermalit*
iqa'wik intestines	*erλawik*	*erchavik*
iqē corner (of the mouth)	*eqe*	*erke*
iqva the back end of the runner of a sledge	*erqua*	*erkok*
iqomavoq he is awake	*erqumawoq*	*erkomavok*
qiqertaq island	*qeqertaq*	*qikkertaq*
miqung hair	*merqoq*	*merkok*
miqun needle	*merqut*	*merkut*
nirdjun a great animal	*ners·ut*	*nergjut*
sirinirn sun	*seqineq*	*sekkinek*
nixē meat	*neqe*	*nerke*
ixiqoq little finger	*erqerqoq*	*erkekok*
ixaluk *ixadlung* } salmon	*eqaluk*	*erkaluk*

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ixaqte a sealskin without any hair on	*eqarte*	*erqekte*
ixkotin sea-weed	*eqv·t*	*erklojak* (?)
-lir (suffix) begin	*-ler*	*-ler*
aiviq walrus	*a·ᵐweq*	*aivek*
neˡtiq seal	*nätˡeq*	*netsek*
tuniq a mythical people	*tuneq*	*tunek.*
imiq water	*imeq*	*immek*
axiˡgirn ptarmigan	*aqiç·eq*	*akkigek*
tupirmut to a tent	*tupermut*	*tuppek*
saunirn bone	*sa·ᵐneq*	*sauneq*
Bf. [*uq ur uρ*]	Gr. [oq or]	L. [oq or]
sūˡqang a whalebone	*sorqaq*	*sokkak*
uqsirn a bone ring at the end of a dog-trace	*orseq*	*oksek*
ajurnapoq it is difficult	*ajornarpoq*	*ajornarpok*
uxsuq blubber	*orsoq*	*orksok*
uxtsuaredlik polar bear	(*orsoq*)	
anure wind	*anore*	*annore*

In these words of the Baffin dialect, accordingly, it seems as if the change of *i* > e and of *u* > o (or ɔ) has not taken place before the uvular consonants. There are only some few examples of this change in this dialect, as for instance *sōrmē* why, *tornit*, plur. of *tuniq*, *qerniq* black, *serdnartoq* sour (Gr. and Labr. *seˑrnartoq*) *niaxoq* head, *eqidliq* a mythical people, likewise the verbal endings *-poq*, *-voq*, *-toq*.

If we now collect all the information that we have been able to obtain about this phonetical change in the course of the foregoing comparison of the different dialects, we perceive exactly wherein it consists. As we see it, it is a retrogressive uvularization. In the life of the language itself, it is rather a matter of anticipated uvularization. It is the uvular position of the palate, which really ought not to occur

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before in the beginning of the suffix, that already gets the upper hand in the stem of the word, whereby the loosely attached syllable (suffix) is closely united with or incorporated in the first part of the word.

The same view of the matter holds good when the suffix begins (not with an uvular, but) with a labial, as we saw in the example Gr. *iwλit* < **ilwit* (cf. NW Al. *il'we*) and in similar examples. Here we find a retrogressive labialization, the movement of the lips being anticipated in the stem of the word.

§ 34. Cases of assimilation in Greenlandic inflexion and derivation. Already several times before (§§ 27 and 33) we have been impressed with the strongly amalgamated character of the Greenlandic language, and we have seen to how great an extent it may be permitted to consider the strong, heavy syllables of this language as developments of heterogeneous elements. Especially in the case of the retrogressive uvularization, we have seen how deep it sets its mark in the morphology of the Greenlandic language.

I shall now proceed to show that this phenomenon is only one particular link in a far more comprehensive chain of phonetical changes, all of which may be traced back to a common cause.

One of the first things that attracts our attention when we stop to think about Greenlandic grammar is the big contrast between the uvularized formations mentioned in the preceding paragraph and the corresponding stems ("nominatives" or absolutives) from which they are derived by grammatical inflexion. The nom. sing. of [ˈarq'a] his name, and [ˈarq'it] names, is [*at'eq*] a name; of [*nerma*] his or its band, [*nim'eq*], a band, cord; of [ɔrnit, ɔrŋit] (plur.), [*un'eq*] armpit; of [erqa], [*it'eq*] anus; of [narqa], [*nat'eq*] floor; of [*to"q·a*], [*tup'eq*] tent etc.

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In short, the original forms of these words have been preserved in Greenlandic in the nominative (absolutive), where the stem always agrees with the stem of the corresponding word in the West Eskimo dialects. But uvularization has been at work in many, if not in all of the inflected forms of these words. — We have the same case in various verbal derivations*).

Retrogressive uvularization, then, appears in Greenlandic in the following cases:

1) in the formation of the plural of certain nouns, all of which end in *q* in the nominative (nominal *q*-stems) and accordingly have stress on the last syllable, for example: [*at'eq*], name, plur. [*'arq'it*]. Compare the regular formation of the plural as in *iλ·o*, house, plur. *iλ·ut*; *inuk*, human being, plur. *inuit* (with about equal stress on all the syllables). N.B. Not a few nouns end in *q* without being acted upon by any uvularization, as for example: *uʷλ·oq*, day, plur. *uʷλ·ut*; *iʷn·aq*, steep declivity, plur. *iʷn·ät*; *a·ta·q*, harp-seal (phoca groenlandica), plur. *a·ta·t*; *nuj'aq*, hair, plur. *nut·'ät*, and several others.

2) in the genitive singular of the same nouns: [*at'eq*], gen. [*'arq'up*] or [*'arq'ip*]; cf. the regular *iλ·o*, gen. *iλ·up*; *inuk*, gen. *inu·p*.

3) in the following forms of the possessive inflexion of the same nouns: 2, 3 and 4 pers. sing. and 3 pers. plur. of the nominative singular of the noun; 3 pers. sing. and plur. of the nominative plural of the noun; 3 pers. sing. and plur. of the genitive of the noun; for example:

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*) Kleinschmidt has ingeniously appreciated and made use of this feature in arranging the words in his dictionary. If we want to know the meaning of *orna*, we have to look it up under *uneĸ*; if we want to know the meaning of *ermuseq* (drinking-vessel) or *ermip·a·* (washes his face), we have to look it up under *imeĸ* (water) etc. Cf. his Grammar § 7 and § 31.

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	Nom. Sing.	Nom. Plur.
1 Sing.	*atera* my name	*atik·a* my names
2 »	[arq*it*] thy name	*atitit* thy names
3 Sing.	[arq*a*] his name	[arq*e*] his names
4 »	[arq*e*] his (Lat. suus) name	*atine* his (Lat. sui) names
3 »	[arq*ât*] their name	[arq*it*] or [arq*e*] their names

	Genitive Sing.	Genitive Plur.
1 Sing.	*aterma* my name's	*atima* my names'
2 »	*aterpit* thy name's	*atiwit* thy names'
3 »	[arq*ata*] his name's	[arq*isa*] his names'
4 »	*aterme* his (suus) name's	*atime* his (sui) names'

4) in certain verbal derivations, for instance:

[*is*ˈerpɔq] goes in, comes in > [ˈerqˈup·ˈa·] carries or brings it in;
[ˈ*is*·ˈerpˈa·] hides it > [ˈersˈup·ˈa·] hides himself from him (children at play);
[*nim*ˈeq] cord, band > [*n*ˈerm*ˈup·ˈa·*] binds him or it.

Cf. the regular mode of formation (with the same suffix *-up·a·*) in *aŋiarpoq*, rubs, files > *aŋiup·a·*, rubs something against something else.

I shall here give a number — probably the greater part — of the Greenlandic nouns that are inflected after the analogy of *ateq* name, *arqit* 1) names, 2) thy name, *arqa* his name; cf. the M. dialect where we have *atépeït* or *atkpeït* names, *atkpen* thy name, *atkpa* his name, and NAl. *atka* his name; SEAl. *atˈka* or *atˈra* my name:

nateq floor — *narqa* its (the house's etc.) floor; cf. M. *natkpo.*
qiteq middle — *qerqa* its middle, cf. M. dialect *kpitkpa.*
iteq anus — *erqa* its or his anus, cf. L. *ittervik* a door-way, NAl. *itka* vent, SEAl. *itˈhrə* his entrance.

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In the following examples, I give the plural form as a type of the inflectional stem:

[*al* — arλ] *aleq* harpoon-strap, plur. *arλit*
[*ul* — ɔrλ] *qoɳuleq* cabbage, plur. *qoɳorλit*
[*a·t*—a·r] *qa·teq* a ferrule, a ring, plur. *qa·rqit*
[*a·ʷn*—a·°r*n*] *sa·ʷneq* bone, plur. *sa·°rnit*
[*an*—ar*n*] *qaneq* mouth, plur. *qarnit*
[*in*—er*n*] *arfineq* six, plur. *arfernit*
[*un*—ɔr*n*] *uneq* armpit, plur. *ornit*
[*a·w*—a·°r] *a·weq* walrus, plur. *a·°rφit* or *a·°ρ·it*
[*iw*—er*φ*] *iliweq* a grave, plur. *ilerφit*
[*uw*—ɔ*ρ·*] *iluweq* a grave, plur. *iloρ·it*
[*ip*—*eʷq·*] *ipeq* filth, dirt, plur. *eʷq·it*
[*up*—*oʷq·*] *tupeq* a tent, plur. *toʷq·it*
[*im*—er*m*] *imeq* water, lake, plur. *ermit*; *nimeq* band, plur. *nermit*

There are also some few examples of such words, where the stem ends in a back consonant:

[*iq*—e*ρ*] *niqeq* (S Gr.) south wind, in the genitive *neρ·up*
[*aɳ*—a*ρ·*] *kaɳeq* promontory, 3 pers. possessive *kaρ·a*

There are some examples of words whose stem contains an uvular; in these, accordingly, no qualitative change of the vowel of the stem takes place, since it is already uvularized beforehand:

[ar—a^{r}*q·*] *piaraq* the young of an animal, plur. *piarqat*
aqajaroq stomach, plur. *aqajarqut*
niaqoq head, plur. *niarqut*; *ujarak* stone, plur. *ujarqat*
[e·r—e·*q·*] *me·raq* child, plur. *me·rqat*
[ɛr—e*q·*] *taleroq* the forepaw of a seal, plur. *talerqut*
[or—ɔ*q·*] *sioraq* a grain of sand, plur. *siorqat*
oqaq the tongue, plur. *orqat*

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It is not difficult to get some idea as to the shape of the uvularized forms in some earlier period. It lies near at hand to assume that they have all originated in the same way, namely after the analogy of *ateq* and those other words where we have parallel forms to compare with in the West Eskimo dialects*). In these dialects, as we have seen, the inflected forms too represent the stage when the vowel of the stem has not yet been uvularized and the metathesis has not yet been carried out.

But I think it is possible to go one more stage further back.

There is an indication of the original conditions in one of the more central dialects, namely in the Mackenzie River dialect. For the numeral 2, Petitot gives for the Churchill River dialect the form *malρok*, but for the dialect that he himself had heard he gives a form which he spells *mallερok* or *mdlœρok*; Greenlandic has *marλuk*. Analogously, then, I think it may be assumed that *arqit* originally had the shape **ateqit*, which would be the regular plural form of *ateq*, cf. plur. *inuit* (men) < sing. *inuk* (man), plur. *un·uit* < sing. *un·uk* (evening) etc. And Petitot actually gives a plural form for this word from the Mackenzie dialect which could be the next stage of the development of the original form, namely *atépeït*.

Petitot has still more words that show that the present Greenlandic forms must originally have been one syllable longer, namely:

M.	L.	W Gr.
[ɬg] *malœρit*[1] waves	[χ·] *maggit*[1]	[λ·] *maλ·it*, in the sing. *malik*
aρvenelœρit six		» *arφiniλ·it*
	C.	
[ǧil] *tigiliyoyaρk* thief	[ǧil] *tigiliktok*	» *tiλ·it·oq*

[1] In M. also *malit*, in L. *mallit*.

*) Yet at the same time I shall not omit to remark that we may risk making mistakes when we try to reconstruct without qualification the

In these Greenlandic words, there is no uvularization (vowel *i*), for the stem-forms have not given any occasion for it; Petitot's *ρ* in the last syllable probably designates *ɢ* here (not as often otherwise, *r*).

In the M. dialect, then, not only among the nominal *q*-stems, but also among the non-uvular stems, we find examples of unassimilated word-forms where 3 short syllables (i. e. 3 syllables consisting of short sounds) correspond to 1 long syllable + 1 short syllable in the words of the Greenlandic dialect. Another way of expressing it is that in a Greenlandic word of this kind a long consonant has replaced the middle syllable of the word in the M. dialect. In the above examples (*maλ·it*), the Greenlandic *λ·* corresponds to the *læɢ* of the M. dialect; that is the reason why the Greenlandic plural form has a long *l*, although this sound in the singular form *malik* is short.

I think that this case may be employed to explain most of the other Greenlandic plural forms of words that contain a short voiced consonant in the singular and a long unvoiced consonant in the plural. The chief peculiarity of this plural formation, as it is now found in Greenlandic, seems to consist in the shifting of stress that takes place: in the singular *malík*, but in the plural *mˈaλ·ˈit*. I shall later come to consider this peculiarity more closely. Here I shall merely try to explain the quantitative change which at the same time affects the next last consonant in the word. If my hypothesis about the matter is correct, then the lengthening of this consonant is due to the peculiar manner in which the plural of

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original shape of every Greenlandic word of this formation. Only with some modification does the analogy of *arɢa* < *atɢa* apply to *merɢut* (a needle), for in the Alaska language the latter has a form whose stem is *min-* (not *mit-*): SE Al. *mɨnˈkun*, needle: *minnuksŭɢˈtōa*, I want to sew. — In not a few cases, an uvularized stem is found in both the eastern and the western dialects

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these words has originated. The plural suffix *-it* is added to the consonantal singular form so that the final consonant of the singular (*k* or *q*) enters into the plural form: *-kit* or *-qit*. I consider this to be a later feature in the language, although at present most Greenlandic nouns form their plural according to this principle. The more original principle is no doubt that which we find kept up in such simple plural formations as for instance sing. *nuna* (land), plur. *nunat*; sing. *inuk* (man), plur. *inuit*. Here *t* or *it* is added to the vocalic stem. But the plural forms of later construction are characterized by their retention of the final consonant. Ex.

Sing.	Plural (Greenlandic)
qipik feather bed	*qiᵘk·it* < **qipkit* < **qipikit*
tipik small	*tiᵘk·it* < **tipkit* < **tipikit*
qatik a bird's breast	*qak·it* < **qatkit* < **qatikit*
iwik grass	*iᵩ·it* < **iwqit?* < **iwikit*

Here belongs also with a voiced consonant in the plural:

umik beard *um·it* < **umqit* < **umikit*

Likewise in the following examples, where it is uncertain, however, whether the long *l*- and *k*-sounds [*λ·*, *k·*] represent original groups with *q* (*lq* etc.) or if these words originally are *k*-stems (not *q*-stems) and the long consonants are derived from *lk* (through *lq* or *lχ*), *qk*, *wk*:

Sing.	Plur.
talˡeq arm	*tˡaλ·ˡit*
ukalˡeq hare	*ukˡaλ·ˡit*
uilˡoq mussel, shell	*uˡiλ·ut*
alˡoq sole of the foot	*ˡaλ·ut*
asaloq the little stool to lay the implements on in a kayak	*asˡaλ·ut*

Sing.		Plur.
isiɳak (N Gr.) / *isiqak* (S Gr.)	foot	*isik·at*
na·laɳaq (N Gr.) / *n·alaqaq* (S Gr.)	master	*na·lak·at*
inuwaq a toe		*inuᵘk·at*
tuluwaq a raven		*tuluᵘk·at*
qilaluwaq a white-whale		*qilaluᵘk·at*
etc.		etc.

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The last words, then, all have a peculiarity which distinguishes them from *malik*; they are namely *q*-stems in the present language. But aside from this, is not the case with these plural forms the same as the case with Gr. *maλ·it*, which in the M. dialect had the form *malæpit* [*maleqit*?], but in the singular had the form *malik* in both dialects?

That the longer form from the M. dialect represents an older stage than the Greenlandic form, and that this stage has at one time been represented in the latter dialect also as far as these words are concerned seems to be evident not only on comparing the forms of the M. dialect, but also on comparing the many other words in the present Greenlandic language that form their plural in an exactly corresponding manner, namely by the simple addition of the plural-suffix to the singular form. I shall here give some examples of this formation, classifying them according as the final consonant of the base-form is or is not subjected to change when the ending is added:

[*t*] unchanged: *merqut* needle, plur. *merqutit*; *aɳut* male, man, plur. *aɳutit*; *up·at* thigh, plur. *up·atit*.

[*t* > *s*]: *a·wλá·ʇ* shooting weapon, plur. *a·wλá·ʇsit*; *iλ·it* a board in the stump-bed, plur. *iλ·isit*; *more·rsit* grindstone, plur. *more·rsisit*.

[*q* > *r*]: *ikeq* bay, plur. *ikerit*; *tikeq* forefinger, plur. *tikerit*; *sɳeq* boot-laces, plur. *sɳerit*; *kaɳeq* promontory, plur. *kaɳerit*; *υ·neq* a burn, plur. *υ·nerit*; *iλ·eq* stump-bed, plur. *iλ·erit*; *pân·eq* he-reindeer; plur. *pân·erit*; *nerλeq* a goose, plur. *nerλerit*.

[*k* > **q* > *ɳ*]: *up·ik* owl, plur. *up·ɳit*; *tυ·λ·ik* big loon, plur. *tυ·λ·ɳit*; *kiλ·ik* boundary, limit, plur. *kiλ·ɳit*; *as·ik* picture, plur. *as·ɳit*.

So I consider this mode of forming the plural to be more original than the mode first taken up (*malik*, plur. *maλ·it*).

I have a few remarks a propos of the last examples. The transition from *k* to *ɳ* has more probably taken place through an unnasalized *ɠ* than at one bound. I conclude this from a

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couple of these words ending in *k* which have a second plural form, one that seems to have resulted from an assimilation of *-it* and the final syllable of the singular form; both *up·ik* and *tʊ·λ·ik* have such double plural forms, the first *up·ɛ·t* (and *up·ɛŋit*), the second *tʊ·λɛ·t* (and *tʊ·λɛŋit*). Some few other words form their plural only in this way:

man·ik egg, plur. *man·ɛ·t*; *orpik* a tree, plur. *orpɛ·t*; *sawik* a knife, plur. *sawɛ·t*.

Of course *-ɛ·t* could have originated from *-iit*, the words thus being inflected on the stem alone; but *iqi* too would in an assimilation become *ɛ·*, and there is reason to assume that this intermediate form has existed, when we compare the doublets: *up·ɛ·t*, *up·ɛŋit* with the sing. *up·ik*. The transition $q > \eta$ is well known. So I think we may assume that the plural forms of these words have originally consisted of three syllables. In the pronunciation of some people and in some words, *-iqi* has passed into *ɛ·* (**orpiqit* > *orpi·t*); in the pronunciation of others and in other words, it has passed into *iŋi* (*up·ik*, plur. **up·iqit* > *up·ɛŋit*).

With respect to the examples with final *q* in the singular, the first question is, why has the retrogressive uvularization not taken place in these words. It might be suggested that these words, at all events as far as their final consonant is concerned, belonged to a later period of the language, so that the time for uvularization was past when they began to be inflected in the plural etc. But against this hypothesis there is the fact that they are so wide-spread in the western dialects. The truth of the matter is rather this, that there may be certain conditions in the base of the word which prevent uvularization from penetrating into it. It need not be supposed that these conditions are of the same kind in all of these exceptions; for each of these exceptions there may have been a special reason why it was preserved as a trisyllabic word in the plural. In the first place I have in mind the difficulty of

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articulating certain sound-groups; for instance, if the syllable *ik-* in *ikeq* should be uvularized, the result would be a combination *iq*, which is difficult to propounce; for that reason *i* is otherwise as a rule changed to *e* in the East Eskimo dialects*); but — that is another reason — such a change would make this word unrecognizable, and this circumstance leads to a break in the tendency of the language in this case, so the old-fashioned plural form is preserved (*ikerit* etc.). But the new habit of formation is seen for instance in *nineq* (band, cord) plur. *nermit*.

With respect to the words: *nerλeq*, *pân·eq*, and *iλ·eq*, I consider it highly probable that they have preserved the old trisyllabic plural because the first, now the heavy, syllable of the word has originally consisted of two light syllables, the original plural form of this word having consisted of four syllables.

When I consider it probable that this circumstance may have prevented retrogressive uvularization from taking place in these words, then it is because I feel convinced that the development of uvularization is very closely connected with a differentiation of the even word-stress, that which I have found to be present in all Greenlandic words with similarly constructed syllables. For instance if we conceive of [ˈiλ·ɛrˈit], the present plural of *iλ·eq*, as resolved into an original form consisting merely of light syllables **ikilerit*, these syllables would all have about the same stress. The same would apply to all the plural forms cited, both those with and those without an uvularized base in the plural (and to

*) Except in the dialect of Baffin Land, and likewise in some Greenlandic words: Gr. *is·e*, eye, *is·e*, cold, *iʷs·oq*, turf, mould, *is·erpoq*, is hidden, hides himself. The older forms of these words, namely *irse*, *irse*, *irpsok* (Fabricius *irbsok* or *irvsok*), *irserpok*, which are found in Egede (and Fabricius), show that the high position of the front of the tongue, especially when followed by *s*, has got the better of the uvularization and exterminated it, as it were.

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the other inflectional forms that are formed on the same stem as the plural form). In other words, the case applies not only to those words where there has been a possibility for uvularization, but to all those nouns and all those verbal derivatives in the East Eskimo languages where the declension or derivation of the word is accompanied by a change of stress.

From all those words, then, in the present language that have even stress on all their syllables because the syllables are similarly constructed, I draw my conclusions for that period of the language when the forms treated here were as yet unassimilated; they must at that time have consisted of similar series of syllables constructed alike with a certain stress on each syllable but with the same stress on them all. (I think I may be permitted to assume that the accentuation of the language was the same then as it is now). But then there came a time in the history of the language when the even stress — for unknown reasons — became undulating as it were, and has divided itself between the first and last syllables of the word. It was at this stage of development that Petitot wrote down, for instance, the word *mallerok*, cf. Al. *mălrūk*, Gr. *marλuk*) which he also gives with an accent on the first syllable and spelled: *málœpok*; cf. his *atépeït*, the plural form of *ate'ñ* (a name), which in Greenlandic has the shape: *at'eq*, plur. *'arq'it*. When the middle syllable loses its stress, its vowel is dropped in the course of time, and the result is a consonant-collision. In the western dialects, the course of development is in many words still at this stage, while in the dialects at Davis Strait, a different distribution of the sound groups of these words has taken place, a distribution which has led to the assimilated and geminated consonants of the present language and moreover in a number of words to the uvularization of the base-syllable itself.

In conclusion I shall venture to give some illustrations of how I suppose the development of the present Greenlandic

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forms in each single case to have taken place; the hypothetical intermediate forms are, as usual, marked with an asterisk, but I may remind the reader that for several of these forms there are real parallels in the West Eskimo dialects and that closer acquaintance with these dialects will undoubtedly lead to the discovery of many more forms which will establish the correctness of those given here merely as hypothetical:

Present Greenlandic Sing.	Plur. or Possessiv	Intermediate Phases of Plural Formation			Original and regular Plural or Possessiv
ateq a name	ar*qit*	< **aq·it*	< **atqit*		< **ateqit*
nāteq a floor	nar*qit*	< **naq·it*	< **natqit*		< **nateqit*
iteq anus	er*qa* (his a.)	< **irqa*	< **itqa*		< **iteqa*
qiteq middle	qer*qa* (its m.)	< **qirqa*	< **qitqa*		< **qiteqa*
miteq eider duck	mer*qit*	< **mirqit*	< **mitqit*		< **miteqit*
a·ᵐweq walrus	a·ᵊr*φit* or a·ᵊ*ρ·it*	< **a·ʷφρit*	< **a·writ*	< **a·werit*	< **a·weqit*
aleq harpoon-line	ar*λit*	< **aλρit*	< **alrit*	< **alerit*	< **aleqit*
iwik grass	*iφ·it*	< **iφχit*	< **iwgit*	< **iwigit*	< **iwikit*
qipik featherbed	*qiᵐk·it*	< **qiwkit*	< **qipkit*	<	< **qipikit*
tupeq a tent	*toᵐq·it*	< **tuwqit*	< **tupqit*	<	< **tupeqit*
nimeq band	*nermit*	< **nirmit*	< **nimrit*	< **nimerit*	< **nimeqit*
akuneq interval, place between	*akɔrnit*	< **akurnit*	< **akunrit*	< **akunerit*	< **akuneqit*

Similar series of phases of development can be drawn up for a number of derivatives which are formed with suffixes whose meanings are known from their combinations with other words, for example:

With the nominal suffix *-useq*, a means (instrument) by which something is done:

imeq water: { *ermuseq* / *erwŋuseq* } a dipper < **irmuseq* < **imruseq* < **imeruseq* < **imequseq* / < **irwŋuseq* < **irmguseq* < **imrguseq*?

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With the nominal suffix *-araq* little

nigeq south wind: *neρ·a·q* a gentle south wind < **niρ·a·q* < **niχρa·q* < **nigra·q* < **nigeraraq*

With the verbal suffix *-umawoq*, which in the present Greenlandic and Labrador dialects designates that something or someone is in a certain state

iterpɔq wakens: er*qumawɔq* is awake < **irqumawɔq* < **itqumawɔq* < **itequmawɔq*

iserpɔq goes in: er*qumawɔq* has dived down under the water < **irqumawɔq* < **isqumawɔq* < **isequmawɔq*

With the nominal suffix *-ut* or *-it*, which designates an instrument with which something is done, a reason, or the like:

nimeq: *nermup·ɔq* winds itself about something < **nirmup·ɔq* < **nimrutpɔq* < **nimerutpɔq* < **nimequtpɔq*
a band

imeq: er*mip·ɔq* washes himself in the face < **irmip·ɔq* < **imritpɔq* < **imeritpɔq* < **imeqitpɔq*
water

aterpɔq: ar*qup·a·* brings it down < **aq·up·a·* < **atqutpa·* < **atequtpaa*
he goes down

Before leaving this subject, I shall stop to consider those nominal *q*-stems (Greenlandic) in the formation of whose plural a shifting of stress takes place, however, without that uvularizing of the inner part of the stem which might be expected. Why does it fail to appear? I have already formerly mentioned some of these cases (*uiloq—uiλ·ut* etc. cf. pag. 248). I suggested the possibility that these words were not originally *q*-stems, but ended in *-k*, so that there was really nothing to cause uvularization. I did not mention the other difficulty which in that case would still remain, namely the explanation of the presence of the vowels *u* and *a* in the plural ending instead of *i*; for the only plural suffixes that we consider regular are *-t* or *-it*. If the middle syllable should disappear from what we suppose to have been the original plural form (**uiloqit*),

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we should of course expect the ending *-it* (**uiλ·it* instead of *uiλ·ut*). We do not meet with this difficulty in those words which end in *-ik* (*malik* etc.) or *-eq* (*taleq*) in the singular. But in those words of this kind which end in *-oq* or *-aq* (*na·lagaq*) in the singular (in the plural respectively *-ut* or *-at*) there are accordingly two irregularities to be explained: the absence of uvularization in the last syllable but one and the presence of *a* (*ă*) or *u* in the last syllable. Many more examples of non-uvularized plural forms might be added to those already given (cf. pp. 243 and 248):

nig'aq (snare), plur. *n'iχ·ät*; *qatig'aq* (a back), plur. *qat'iχ·ät*; *nan'oq* (bear), plur. *n'an·ut*; *tas'eq* (lake), plur. *t'ät·it* etc.

Most of these plural formations may belong to a latest stage in the development of the plural inflexion of nouns; perhaps there is no longer any question here of an assimilation of *q* (or *k*) with the inner consonant of the stem, but they may simply be analogical formations after the earlier models. The shifting of stress has been felt as the main principle in the formation of the plural form and along with it has followed quite mechanically, so to speak, that change of the stem consonant which consists in its lengthening and, in so far as it is a non-nasal, its unvoicing. As for the suffix, however, the original manner of constructing the plural is retained, namely by the addition of *-t* to the stem vowel.

§ 35. Historical perspective. Although next to nothing is known about the language spoken in large portions of the Eskimo world — I include here the American polar archipelago and in part Baffin Land, the north coast of the American continent south of the archipelago, the coasts of Hudson Bay, the northern coasts of Alaska and the Asiatic side of Bering Strait — yet the three or four dialects that

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have been more or less thoroughly investigated (the dialects of Greenland, Labrador, the mouth of the Mackenzie River and South West Alaska) furnish sufficient material for us to be able to make a temporary sketch of the differences between them. In the last two sections, I have especially tried to get at the bottom of some of the phonetical peculiarities of the dialects in these four places. I may add that the impressions that I have got from the lists of words and the many scattered words given by travelers in their accounts about the interjacent districts have only served to support the results that I have come to through the chief works about the Eskimo language.

From the nature of the dialectal differences it is in many cases possible to draw conclusions with regard to the history of the language. — In the following I shall try to combine these conclusions with the few historical facts that are known about the Eskimo. Among the facts I include the theory so plausibly set forth by H. Rink, namely that the Eskimo have developed their special form of civilization in common as a coast-population at some point on the arctic coast, and that from this point — whose exact situation is uncertain — they have followed the coasts in slow migrations until they have become distributed as at present*).

When Greenlandic in a great number of words has *s* where the American dialects have *j*, it is reasonable (even if not necessary) from a general phonetical point of view to assume that *j* is the primary, *s* the secondary sound. That this is the case in the Eskimo languages is confirmed by the fact that the transitions that take place between other open consonants within this family of languages always seem to have been in the direction from voiced to unvoiced sounds. Within the Greenlandic language itself, the aspirated fricatives are secondary in relation to the voiced fricatives; for they often

*) H. Rink· Om Eskimoernes Herkomst. Aarbøger for Nordisk Oldkyndighed og Historie, 2. Series, Vol. V, Copenhagen 1890.

occur when a word whose stem contains a voiced fricative is either inflected or supplied with a suffix so that it undergoes a shifting of stress, as for example:

iwik a blade of grass	plur. *ˈiɕ·it*
alˈoq a sole of a foot or a boot	" *aλ·ut*
nigˈaq (S Gr.) a snare	" *nˈiχ·at*
neriwoq is eating	*nˈeρ·iwˈik* the place where you eat, table or dining-room

Now if we find similar relations existing between the same kinds of sounds as they occur in two different dialects, it is natural to regard them after the analogy of the parallel relations within the single dialect. So when we find that *kiliqwaq* fossil elephant, mammoth (Ray, Petitot) in the western dialects has become *kiliφ·aq* in Greenlandic, the latter form is undoubtedly later than the former; the unvoiced fricative *φ·* in Greenlandic has accordingly originated by the assimilation of two different voiced fricatives. *kiwqaq* a servant, a house-maid in the Labrador and Mackenzie dialects has got the form *kiʷφ·aq* in S Gr., where the voice perhaps still lingers a little in the beginning of the *φ*-sound, but otherwise the case is essentially the same as the preceding one, only that *w* in the unassimilated form here stands before *q*. In the SW Al. dialect I find the word in the form *kāˈvūgăk* messenger, envoy (Barnum). — In the preceding sections (pp. 225, 233, 236, 246, 248), there are examples showing the same relations between the other open consonants. The orthography in the specimens of the western dialects has throughout, as we have seen, *bw*, *wq*, *lq*, *gj*, *rj*, *rg*, as against Greenlandic *φ*, *λ*, *ς*, *χ*. Therefore I have been led to infer that voiced sounds originally corresponded to the present unvoiced fricatives in SW. Greenlandic.

In these cases, *Upernawik* Greenlandic and *Ammassalik* Greenlandic, as has often before been mentioned, have got unvoiced stopped consonants, for example: *kiʷpa·t* instead of

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SGr. *ki^{w}φ·at* (plur. of *ki^{w}φ·aq*). Since this peculiarity is common to these two groups, which are geographically so widely separated, it must already have developed at a time when they composed a group together or both belonged to another group as against the remaining Greenlanders. In relation to the fricatives of Middle and South Greenlandic, then, these stopped consonants are scarcely secondary*), but rather parallel developments of the same voiced sounds from which the fricatives have developed. The fact that they almost completely take the place of the unvoiced fricatives is so important that it makes the whole consonant-system of this «northeastern» group different not only from the South Greenlandic but also from the sound-systems of all the other dialects which it has been possible to analyze phonetically. — On the other hand, South Greenlandic and the Labrador dialect agree in this respect (cf. pag. 203).

If we now turn to the relation between *s* and *j* in these dialects, their distribution is at first glance different. The *s*-sounds seem to connect the *Upernawik* dialect with Middle and South Greenlandic. The Labrador dialect differs from South Greenlandic in that it has *j*. Yet on closer inspection the case assumes a different aspect. The transition from *j* to *s* (unvoiced) between two vowels I think may be considered as peculiar to Middle and South Greenlandic. If the inhabitants of *Upernawik* have this *s* throughout, and I have reason to believe that they have, yet it is not certain that they have got it at the same time as their neighbors to the south; for instance it is possible that after they had settled down in their present territory, they have been influenced by intercourse with their neighbors and have adopted the sound from them. In favor of

*) Within the Indo-European family of languages, the stopped consonants, for instance *p t k*, are generally primary in relation to the Germanic unvoiced fricatives. But the case is different in the Eskimo language-group; the stopped consonants in question are here geminated sounds. Long consonants are always unvoiced in Greenlandic in so far as they are not nasalized.

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this hypothesis there is among other things the fact that the *Ammassalik* language — the eastern branch of the group — in at least a couple of the words that have been communicated to me has *j* instead of *s*, for example in the common adjectival suffix *-kajik* evil, bad (S Gr. *-kasik*). The Eskimo of Smith Sound have voiced *s* [*z*] here, I think (cf. p. 215). If these northernmost dialects (including that of *Upernawik*) have originally belonged to one and the same group, they have gone different ways with respect to this sound since their separation.* Before their separation, however, it is probable that they have had this *j*.

The case is analogous to that of those words where S Gr. has *ts* (*nätseq* a seal) M Gr. *t·*, Up Gr. *s·*, E Gr. *t·* or *tç* (*tjs*), L. *ts* or *tj*, Al. *tj* (cf. § 31, pp. 190—192 and § 32, pp. 205—208). Here too L. and S Gr. agree, whereas the northernmost groups in Greenland not only deviate from these but also from each other. — Finally there are a couple of words in which all W Gr., so far as I know, has *s·* (*täs·a*, *mas·a*), where E Gr. has *ts* and *t·*, L. *tj* (*tamadja*) and *χ·* (*tagga*)*), and the western dialects *dj*.

I shall give a survey of these sound-changes in the different dialects, as shown in the examples in the previous sections (§§ 31—32), but it must be remembered that the correspondence between the sounds is not absolute, *j* in one dialect, for instance always corresponding to *s* in the other; on the contrary, in many words *j* occurs both in L. and Gr.; not every *t* in L. has become *s* in Gr. and so on. Besides my sources are so scanty that I have not often succeeded in getting information about one and the same word in all the dialects. The table is therefore on several points of purely temporary value.

Al. and M.	L.	Bf.	M Gr.	S Gr.	E Gr.	Up Gr.
j	*j*	*j*	*s*		*j*	*s*
t	*t*		*s*		*s*	*s*
tj (*dj*?)	*tj*, *ts*	*t*, *dj*?	*t·*, *s*	*ts*, *s·*	*ts*, *t·*	*s·*, *ᵗç·*
tš, *ts*	*ts*	*ts*?	*s·*			*s·*

*) Cf. Bourquin Esk. Gr § 192.

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The *Upernawik* Greenlanders, then, have carried this change fartherst since the time when it began.

Of great interest is the fact that the Labrador dialect has taken part in the change of *j* to *s*, namely in a number of those words where *j* was preceded by *t* (N Al. *tj*). From that I conclude that this change has begun in the words which contained *tj*. At this point the Labrador dialect came to a standstill without having completely carried out the change. Therefore this dialect has sometimes *ts* and sometimes *tj* in those words where Greenlandic has got *ts*, while the more western dialects in Alaska have *tj* and, just like Labrador, *j* in those words, where W Gr. has got *s*. Where the western dialects have *ts*, these sounds have been preserved in the L. dialect, while Greenlandic through more advanced assimilation has generally got *s·* (or *s*), cf. the examples cited in § 32. This change of sound in the East Eskimo dialects (*tj* > *ts*) must accordingly have begun shortly before the separation of the L. and S Gr. dialects. In other words, the tendency to change the sound *j* to *s*, a change which the present Greenlanders have extensively carried out, had already begun in the districts on the other side of Smith Sound while the ancestors of the South Greenlanders were still closely connected with the Labrador tribe. It may be dated as the time just before the invasion into Greenland in the 13th C.

The change of *t* to *s* in Greenlandic is probably somewhat later.

The next phonetical phenomenon to be taken up is of just as great importance for the establishment of boundaries between the dialects as the one we have just left. It is the metathesis or retrogressive uvularization that has been treated in § 33. It seems as if the boundary-line drawn by this phenomenon must lie between the Mackenzie River and Labrador; for the present I assume it to be the west side of Hudson Bay. The

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language west of this line, then, is West Eskimo, the language east of it, East Eskimo.

If the Central Eskimo group should prove to be on the West Eskimo side, the boundary-line must be somewhat modified.

In about all the examples that have been found of retrogressive uvularization, the Mackenzie River dialect agrees with the Alaska dialects in having preserved the original shape of the consonant-group, where the uvular stands last (*itjr-*, *atjr-*, etc.). Only in the word for eye, does the Mackenzie dialect come nearer to the present Labrador form *ij·e* than to the Alaska words, the latter having preserved, but the former having completely lost the uvular. But this sound was still preserved in this word in the Baffin Land dialect as late as Frobisher's time, and indeed in Greenlandic even as late as Egede's time (*irse*), and in these dialects it occupied the first place in the consonant-group; this leads me to presume that it must also have been present at one time in the Labrador and Mackenzie dialects, whether it has had the same or a different position in the consonant-group in those two dialects.

The subject of metathesis and uvularization in the Eskimo dialects is not exhausted when we have determined the chief line of division between East and West Eskimo. As has already been mentioned at the end of § 32, there are indications that within the West Eskimo dialect-group (Mackenzie R. dialect and Alaska dialects) there must have existed an old division similar to the one between the East and West Eskimo groups. In other words, as far as these sound-changes are concerned, there seem to be two strata, as it were, in the dialects. Petitot's Vocabulaire of the Mackenzie R. dialect contains several forms which might indicate that this dialect too, in several words, has followed these East Eskimo tendencies. For example: M. *topnpapk* (démon), *apnapk* (femme adulte), *kpepneptopk* (noir), *tchepnaptoapk* (gratin), *opktçôk* (graisse) — cf. Gr. *to·rnaq*, *arnaq*,

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qernertoq, *se·rnartoq*, *orsoq*. Whether the stems of these words have in the distant past been without an uvular or had *nr*, *sr* instead of *rn*, *rs*, the uvularization of their first syllable must have taken place at a time when the Mackenzie R. Eskimo and the East Eskimo had not yet separated from each other. It is highly characteristic that in the following form in the M. dialect, where the retrogressive uvularization is distinct enough, present Greenlandic has, not uvularization, but a geminated consonant:

M. *ameρk*, skin, plur. *aρmgit* (or *amit*)
Gr. *am'eq*, skin, plur. *'am·'it* (or *am'it*).

It lies near to assume that the Greenlandic long *m* in the plural is in reality an assimilation of an original *rn*, which is preserved in the West Eskimo form. If this is the case, this form has had the same fate as Gr. *irse* (Egede) > *is·e*, an eye, except that the latter assimilation belongs to one of the newest strata in the language, the former to a very old stratum.

The retrogressive uvularization, then, has perhaps already begun in a few words before the Mackenzie R. Eskimo separated from the East Eskimo, but it has not struck root in this dialect, which undoubtedly belongs together with the western dialects. The chief demarcation for this sound-change, indeed for the dialects on the whole, is no doubt the one that I have already suggested.

In the far distant past, then, the original Eskimo horde must have separated into two flocks, of which the flock toward the east, before it was again subdivided, carried out the metathesis. Since this is common to both the inhabitants of Labrador and of Greenland, it may be assumed that it was carried out before the invasion of Greenland, in the districts west of Davis Strait.

But here we are again confronted with a surprising form in Frobisher. Of the language in Baffin Land, which geographically lies between the two dialects mentioned last and bars

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the way between them, he wrote down a word containing the group *tq*, where now-a-days — in Greenlandic, in the Labrador dialect and undoubtedly also in the dialect of Baffin Land — we find *rq*; it is the word for »the little finger»:

Frobisher 1576: *yacketrone* (i. e. locative: on the little finger).

Present Greenlandic and Labrador loc.: *erqerqune*, in the nominative, *erqerqoq*.

Present N Al. *yiûkutko*. NW Al. *etitkook*. SW Al. *ikkilthkōka* (my little finger).

Frobisher's form is probably meant to reproduce something like [*s'ȧk-'etqon'e*], which, among other things, shows that the assimilation *tq* > *rq* in this dialect had not yet been carried out in this word at the end of the 16 C.*). This might indicate that the Eskimo who speak this dialect, the Central Eskimo, have come to this coast from the districts farther west, where *tq* is still to be found, some time after the separation of the Gr. and L. Eskimo.

If all the premises are correct, then we may conclude that the Central Eskimo have taken possession of their present territory in Baffin Land sometime between 1266 and 1576, after their Eskimo predecessors in these parts had wandered north in the direction of Greenland. The inhabitants of Labrador had probably already at that time been settled for several centuries on the same coasts where they are today. If the Skrælings whom the old Norsemen found in Markland (and

*) The occurrence of *rq* in the first syllable of Gr. *erqerqoq* is yet to be explained; we get the impression that it is the uvular of the following syllable that has cast its influence back on the first and produced a phonetical analogical formation (cf. Lat. quinque < *peŋkwe, Brugmann § 332).

Furthermore it is striking to find *ia* in the first syllable instead of *e*. The correctness of the traditional form, however, seems to be confirmed by comparison with the form that is still preserved in the N Al. dialect, to which may be added the following parallels: N Al. *yiōksa* cheek = Gr. *ersaq* and N Al. *yögniabwiñ* egg moon, whose first syllable may possibly be related to Gr. *it-'ik* the white of an egg (*-wiñ* time, *-nia* hunt for).

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Helluland?) i. e. Newfoundland and Labrador*) really were Eskimo, they were no doubt the ancestors of those who are now living in these districts. Since the South and Middle Greenlanders, as we have seen, have probably belonged to the same flock as these old Labrador Eskimo, before they wandered north over Smith Sound to Greenland, it must have been in the course of the centuries just before 1266**) that they separated from those who remained in Labrador, and followed the western coasts of Davis Strait. After that Baffin Land got the population that Frobisher fell in with, and whose language with respect to the uvularization seems to have been at an earlier stage of development than the language of the Labrador Eskimo and the Greenlanders; so this people has probably come from the west. Now if the northernmost groups of Greenland constitute together one original group as against the South Greenlanders, and if they have immigrated into Greenland later than the South Greenlanders, it seems natural to connect them with the original tribe of Central Eskimo in the west. Whether they have separated from this tribe earlier or later than the flock that went to Baffin Land is impossible to decide now with any degree of certainty. But it is tempting to see some connection between the Greenlandic Eskimos' hostile advance toward the south about the year 1400, as described in the accounts of the old Norsemen***), and the arrival of these new hordes (i. e. the *Upernawik* Eskimo), who from the northwestern corner of Greenland must have pushed on toward the south following the coast, always seeking for new and better hunting and fishing grounds. Already at that time their language deviated somewhat from the language of their neighbors to the south, whom they here fell in with. As strangers belonging to another tribe they were at first regarded as enemies by the South Greenlanders; but in the course of time they have mixed

*) cf. Introduction, p. 18. **) Ibid., pp. 17, 24. ***) Ibid., p. 27.

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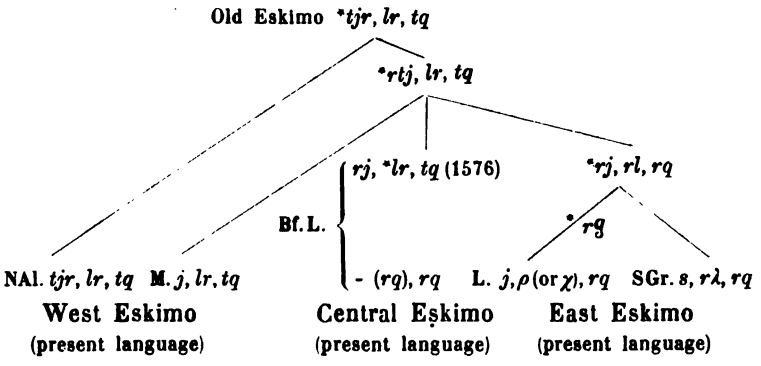
with those living farthest north (in the *Oommannaq* District and perhaps somewhat farther south), which may perhaps explain some peculiarities in the Middle Greenlandic dialect, for example *ŋ* and *t·* where S Gr. has *ɣ* and *ts*, *r̃* or *ŋ* between two vowels, which is used by the population around the *Oommannaq* Fjord where the West Greenlanders farther south use unnasalized *r*, and in the dialect of the *Upernawik* Eskimo themselves, the *s*-sounds instead of the original *j* and *tj*.

That metathesis which took place in the joint period of the East Eskimo group must needs belong to the prehistoric times of the Eskimo race. So from a linguistic standpoint it is impossible to locate exactly the home of this main group, even if we may presume that it lay somewhere along the Arctic coasts of America; all that can be said is that two Eskimo groups have moved in such a way in relation to each other that the one has settled down farther west (the one that has kept the language at its earliest stage of development), the other farther east (the one whose language is strongly affected by assimilation).

I shall now give a survey of some of the examples of the metathesis and the retrogressive uvularization in their genetical relations to each other. Those sounds or pairs of sounds that are not marked with an asterisk have been supplied with examples in the course of the preceding investigations.



There are no doubt a number of grammatical-morphological peculiarities in the different dialects which might also be given in support of these groupings; but they would require special investigation. I shall be content to mention the East Eskimo verbal suffix for 1 pers. ind. *-poŋa*, which is common to L. and Gr., whereas in West Eskimo, we find *-toŋa* (M.) and *tōa* (Al.) instead.

If we consider the forms of the words in the two branches of the language, we find that though there are certain cases where they agree, yet there are many and important cases where they differ. The West Eskimo forms are as a rule fuller and more heterogeneous than the Greenlandic forms; they are accordingly at an earlier stage of development. In SW Alaska we find very old formations along side of forms that are apparently very much contracted. As examples of the latter may be mentioned

Al. *nŭq'rhōă* (I eat) — Gr. *neriwoŋa*

Al. *snē* (its edge or bank) — Gr. *sina·*

Al. *slă* (weather, sky, out of doors) — Gr. *sila*

perhaps also

Al. *ghăn* (native bucket) — Gr. *iqa* (a pot).

The old forms that have been preserved often help us to understand the etymology of the Greenlandic words. By way of a specimen, I shall give four inflectional forms of a verb that is preserved both in Greenlandic and in this Alaska dialect. It is the verb SW Al. *tınglūwăkă* (Barnum Gr. § 469), Gr. *tiλ·up·ara* and its meaning in both dialects is: I strike him with my fist (I fist him). The personal suffixes, which are here translated by: I — thou (fisting), I — you etc., no doubt actually mean: my — thy (*mkin*), my — your (*mchē*) etc., since, when taken separately and analyzed, parts of them coincide with the possessive suffixes of the nouns:

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SW Al.				S Gr.
tingluwamkin	I	fist	thee	*tiλ·up·aʷk·it*
tingluwamche	I	„	you	*tiλ·up·aʷs·e*
tingluwaqpunga	thou	„	me	*tiλ·up·arma*
tingluwaqpukut	thou	„	us	*tiλ·up·aʷt·igut*
tingluwamthn̆)	we	„	thee	*tiλ·up·aʷt·igit*
tingluwamtche	we	„	you	*tiλ·up·aʷse*
tingluwaqpchēă	you	„	me	*tiλ·up·aʷsɛŋa*
tingluwaqpchēkut	you	„	us	*tiλ·up·aʷsigut*

*) i. e. [*tɪŋluwamtihin*]?

The noun from which these verbal forms are derived is lost in Greenlandic, but is preserved in the Alaska dialect, where I find *tingluka* — my fist. Still the Greenlandic verb is formed with the special East Eskimo derivative suffix *p*, so that it seems as if the noun must at some time have existed in the East Eskimo language. This is also indicated by the fact that the *p* is geminated, that is, it is an assimilation of two consonants, probably *kp*, the *k* having been the final consonant of the noun (**tiλ·uk*). With regard to the Greenlandic *λ·* in the middle of the word, comparison with the western form shows that it has originated from *ŋl* (as probably likewise *aλ·iwoq*, becomes bigger, grows, from **aŋliwoq*, which is made up of *aŋi-*, big, and *-liwoq*, increases, becomes more so). The possessive suffixes in the above examples begin in the Al. forms after the syllable *-wa*, in the Gr. forms after *-pa*, which represents those suffixes whose effect is especially verbalizing. Three of the commonest sound-transitions between the two languages are immediately seen on comparing the suffixes, namely the transitions between Al. *m*, *n* and *k* on the one side and Gr. *w*, *t* and *g* on the other side. Especially the last — *k* > *g* (voiced) between two vowels — is characteristic.

It would lead us to digress too far to analyze all the suffixes here, but I cannot deny myself the pleasure of taking up

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just one of them. In the Greenlandic verbal inflection, it is nothing less than a riddle how the suffix for thou — me: *-arma* (for example *takuwarma*, thou seest or sawest me) has got the shape that it has; it stands in remarkable contrast to the corresponding suffixes for the other persons, especially on account of the uvular. If it had not been for the Alaska form given here, I should of course have guessed that the form had been produced by "retrogressive uvularization". But that distant old form shows us that Greenlandic *-arma* has at one time had a more voluminous body, namely one resembling Al. *-arpoŋa*. If we compare the Greenlandic doublets of the same formation, as for instance those for the word *ermuseq* — *erwoŋuseq* (a dipper, a drinking-vessel), we can easily reconstruct all the phases of this assimilation: **arpoŋa* > **arpŋa* > **arwŋa* > *arma*, the present form.

So it is only through the longer Alaska form that we are enabled to understand this Greenlandic suffix. And it is the same in many other cases. The western dialects have been far more conservative than the eastern dialects.

. Therefore if the West Eskimo dialects should some time be subjected to closer investigation so that we can get better knowledge about them, I expect that we shall find many more differences of dialect, and those in part fundamental differences. My rough sketch of the stratifications in this family of languages will by these differences be thrown into stronger relief; they will add new lines to it and will perhaps even essentially change the historical perspective. There is as yet too little known about the languages at the extreme western limits, both on the coast of Alaska and on the adjacent islands (apart from Barnum's grammar of the language in one single district) for us to be able to draw conclusions of scientific value about the relations of those dialects to each other and to the Eskimo family of languages as a whole.

All in all there is yet much work to be done in this

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enormous field of linguistic study. What I have invited attention to is only the results of a first reconnoitring occasioned by my study of North Greenlandic phonetics. However uncertain many of these results may be, yet I hope that they will at least in part be of some assistance if anyone should sometime undertake to compare the Eskimo family of languages either with neighboring or more distant languages with a view to finding the hitherto undiscovered genetical connection, if there is any, between these and some other languages on the face of the globe. If they are not in any other way connected with other languages, they may at any rate have adopted foreign elements from one or several of them.

Few peoples, or perhaps no other people in the world, have such strange boundaries to their territory as the Eskimo, living as they do along the edge of the shrunk ice-regions of the glacial period and on the northern edge of the inhabited places of mankind, with outposts in the east on the northernmost coasts of the Atlantic Ocean, occupying in the west the only point where the old and the new world meet, — a long narrow chain of primitive human beings, the two ends of which have long ago lost connection with, and consciousness of each other, but which is held together by their common and pristine language.

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NORTH-GREENLANDIC CONTRIBUTIONS

TO

ESKIMO FOLK-LORE

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I. Folk-tales.

1. Riddle.

(*Saːtut, Oommannaq* Fjord.)

inːuːgoːq aλːa inuk tikiλːuǥo | oqarpoq | teregiarsoŋːuit inorpigɾːt | naːχa inuːsukːäλːarama aŋumaqaλːarikːa | aːʷma oqarpoq | siutisuarsoːŋuit inorpigɾːt | naːχa aŋumaːsaːräλːarɾːkːa |

A man, it is told, meeting another man | said: | the little *teregiarsuk*'s, can you not overtake them? | No, he answered, when I was still young I could overtake them. | Again he asked: | the little animals with large ears can you not overtake them? | No, I have no longer any practise in overtaking them.

[*teregiarsuk* is to signify the fox? The word is not otherwise known, but is no doubt connected with the usual Gr. name of this animal: *teriänːiaq*, with Labr. *teriaq*, a weasel, with *teriλːuk*, a young ground-seal (phoca barbata), and with N Al. *tĕriˈgûniä* (Ray) an arctic fox, SW Al. *trĕ kănˈ ny ăk* wolverine.]

Hendrik Hugh who related this and the following three tales, which I took down in 1901 at the trading-place Sâgtut on the Umanak Fjord (70° 40′ N. lat.), originally came from the northeastern corner of Disko Bay, where he had heard the tales in his youth. His pronunciation of the language, at least in those tales which he dictated to me, was peculiar on account of his use of the fricative *ǥ* wherever the official orthography has this sound in accordance with the South or Mid-Greenlandic pronunciation instead of the *ŋ* (*ng*) which is usual in North Greenlandic.

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2. The Humble-bee.

(*Sa·ɪtut, Oommannaq* Fjord).

iqut·aq | iλ·o ata·seq qeqertame | un·uk·ut inõm·ik aλ·amik isertus·aqaŋ·it·oq màto map·erpoq | ɪnuk isilerpoq | kajortuin·a·soq is·a·ɪ tukiŋasut | iŋip·oq uk·armut | erŋerλutik in·uit ersilerput | isermat oqàλ·àŋuarane | sanerqam·inut ka·ᵂtorame | am.ʊ.a· qiç·ariàŋuaq | kiλ·im·inut iliwa· | in·uᵂit oqarput isuwsuλ·utik | so·q ta·ma·ɪtoq kina·ᵂna-suàlugo | erŋerλune nip·ine tamà·t sua·rpoq | qiç·ariäŋua·rniarpoŋa|orsoŋuarsiniarλoŋa| ip·atip ata·nik orsomik awiç·iλ·ugo | tun·iwa·t | anim·àt maliλ·ugo | pɪŋuarsõm·ut pulawoq | suna·φ·a | iqut·aq inoρo·rtoq | täs·a na·woq |

There lay one single house over on the island. | At night they kept the door shut so that no stranger could come in. | Yet once there came a person in; | he was all dark red and had scowling (or squinting) eyes. | He sat down by the front wall of the house. | Those who dwelt in there were immediately seized with fright. | The one who had entered did not say a word, but after having stuck his hand into a hole in his side, | he pulled out a little ball of thread | (and) unwound it as far as he could. The inmates of the house spoke to each other in whispers: | why does he act that way? who is he? they think. Immediately the stranger calls out with all his might: | I want to wind myself a little case! | let me have a little blubber! | They took out blubber from the place under the stump-bed, cut it off | and gave it to him. | When he went out, they followed after him. | He creeps into the little case | they look at it in amazement. | He was a bee, which had transformed itself to a person. | This is the end of it.

3. Sun and Moon.

(*Sa·ɪtut, Oommannaq* Fjord.)

qaᵂs·ersuarmigo·q | iλ·o igala·rqaŋ·it·oq | in·uit paᵂniartarφigisa·t | suna·φ·a in·uᵂit isera·ŋamik | ta·rtuin·am·àt | im·inut ili-

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sarɪsamaŋ·in·amik | suna·ʷφ·a | qataŋutiqɛ·t arnarλo aŋuλo | aŋutip qataŋ·un·e arnaq tiguλ·ugo | pa·ʷniartara· | arnap qataŋ·un·e ilisarileramiuk | ila·ᵗne anileriarλune aɕ·ane pa·tˢerλuqit | aŋutip tiqum·ane | kɛ·natiqut pa·rsuarmik at·orpa· | aniqune qäʷm·ariarpat | ilisarisaqamiuk | suna·ʷφ·a qataŋuta·ta pa·ʷniartara· | iλ·uminut arnaq iserame | qataŋutine kɛ·namiqut pa·ʷlisõm·ät kamäλ·une | ipara·q maneq a·ʷmarqilerpa· | a·m·a qataŋuţa·ta a·ʷmaqerλuqo | anip·ut | iλ·o ka·wiλ·ugo malilerput | arnaq qaŋat·arpoq | a·m·a ana· | qaŋat·arpuk | täs·ago·q serqinerλo qa·wmaλ·o ta·ʷkopoŋ·o·q aniqɛ·t | täs·a na·woq |

In the big meeting house[1], it is related, | a house without any window | the place of the innuits |, where they used to lie with each other (?)[2] | whenever the innuits came into it | because it was quite dark | they did not know each other. | What does that mean![3] | a brother and sister, woman and man, | the brother taking his sister | is accustomed to have her to lie by. | When she began to know her brother, | she once blacked her hands with soot before she went out; | when the man took her, | she touched him over the face with much soot. | As soon as he had gone out and it became light, | she recognized him. What! her brother used to lie by her! | When she came home and in the house, | her brother became angry because he had got much soot in his face, | and he began to light the lamp-moss (wick in the lamp). | Also his sister lights something (or makes some lamp-moss glowing). | They go out | and begin to run around the house after each other. | The sister soars up from the earth, | her (elder) brother also. | These two soar. | This is said to be the sun and the moon. | These two, it is told, are those who ran out together. | This is the end. |

[1] Kleinschmidt: *qagsse*, Barnum (§ 809): *kăzhgă*, meeting house, club house of the Eskimo village.

[2] Cf. p. 297 (Drumsongs no. 22, note 3).

[3] lit. what that over there! expresses surprise and contempt.

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4. *Nukappiara·luk.*

(*Sa·itut, Oommannaq* Fjord.)

A man had two wives, it is told. The second, when she got him, did not know but that he was married only to her. When the man went out in his kajak, as he often did, she stood and kept her eye on him. When he had stuck the harpoon into a sufficient number of seals, and he had enough to tow, he used to steer for land over toward the other side of the point. Here he was hidden, and it often lasted a long time before he again appeared. She became suspicious, and the next time he had gone out, she went over to the place where he used to be hidden. Here she caught sight of a house, and as soon as she had seen it, she went down toward it and looked in through the window. She saw a little boy running about on the stumpbed half naked. Being sorry for him because he had no mother, she went in to him and sat down on the stumpbed. When she looked about her, she discovered that there lay some meat under the stumpbed, and on the wall hung a harpoon-line. What! that was her husband's harpoon-line! He had a wife beside her and this boy here was this wife's son! She became angry, and when on looking out through the window she saw a woman approaching — the little boy's mother, who had been out gathering berries — she took the harpoon-line and made a noose of it, which she put up over the threshold in order to strangle her. Listen! now she called her son with a loud voice: *Nukappiara·luk*! When the boy heard his mother's voice, he became glad and drew near; but since he was shy before the stranger in there, he did not go up to the window, but only listened. Now his mother appeared from the house-passage, whereupon the harpoon-line tightened about her. She immediately let go of the berries which she had in her hand and died.

Thereupon the strange woman dressed the boy and let him go with her over to the house that she came from.

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As usual, the husband came home and wanted to visit his wife, but found her dead — strangled — and the little child gone. He quickly set out for his own house (and found that) his second wife had taken the little child over there. He was not angry with her on account of the murder because she had let the boy live.

The little fellow grew up and in the course of a short time became strong and independent. It made an impression on him when he found out that his mother had been murdered. He developed to be a good hunter and fisher and exceedingly strong. Together with his father he went out in a kajak and harpooned a white whale, the first large sea-animal he had caught. When he had come home with the white whale — and they had finished the usual whalehide-eating, he carried his harpoon in and after having let it fall on the floor, he took hold of one end of it and said: this (the harpoon strap) ought to have had a mother! because the big harpoon murdered her, because it wound about her, I have jerked it to pieces as I was about to roll it up.[1] See, there lies an instrument, which has been a trap! there lies one who has got his mouth opened wide! — This is the end of the tale.

5. *Arnalik.*

Rodebay (Pele Madsen), Jakobshavn.

arnaliŋ·o·runa | pula·ɪartɔ·mawoq | iluman·ame nunaqarλune | ituλ·ip iluanut tut·uniartarput | tut·ut ikat·ut | umiane ulik·arλuŋo | aŋerλartarpoq ukiulera·ŋat | upernera·ŋaλ·o a·m·a tut·uniarqit·-arpoq | pularqawim·inut ila·ɪ tikik·amik | oqarput s"ormeta·"wa | tut·ut pă·rutilerpat | im·aqa ersiŋisaqaleramik | a·rim·e ila·ne uλ·uk·ut pisut·ut tikik·amik | oqarput narsarsɔ·p iserφiane | quλ·oŋiaq aŋiso·rujus·uaŋortoq tako"arput | ta·na·"na ersiŋaloŋo tut·ut pă·rus·imasut | aŋutit ikät·ut im·inut tikiλ·utik oqaluarsa·-

[1] It takes almost superhuman strength to jerk such a leather strap to pieces.

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rup·ut | *arnalik iserame ā̃ne oqarφiŋa·* | *so·rmak·o aŋutit oqalut·ut* | *arna· niλ·iŋ·ilaq* | *kamalerpoq arne unatalerpa·* | *kɨ·sa oqarφiŋa·* | *suaŋ·o·rin·a* | *quλ·oŋiarsʊ·p aŋisorsʊ·p neris·ua·tiŋ·o·q* | *arnalik ta·mak aniŋame iserpoq* | *tupime qanàŋue erqup·a·ɪ* | *sanalerporλo qas·uliorλune* | etc.

Arnalik, it is told, him (you know), | was about to set out on a reindeer-hunt in (the valley of) the fjord | having his settlement in *Ilumannak*. | There they used to capture reindeer at the upper end of *Ituwλeq* Fjord. | There were numbers of reindeer. | When *Arnalik* had filled his big skin-boat with the game, | he used to return home at the beginning of winter, | and when it again became spring, he again started out reindeer-hunting. | Once when some of his country-men came into their hunting district around the fjord, | they said: What does this mean? | are the reindeer beginning to stay away (decrease in numbers)? | perhaps because they are beginning to be afraid of something. | Quite right! when some of them once, after having wandered afoot all day, came (in there), | they said: at the entrance to the big plain | we saw a worm (*quλ·oŋiaq*)[1], a terribly big one; | out of fear of it the reindeer have disappeared. | The men coming to each other in crowds, talked about it. | *Arnalik* went in (into the house) and said to his mother: | why are these men talking together? | his mother said nothing. | He became angry and began to beat her. | Finally she said: | that other one (that one out there) is said to be a bad one[2] | the big *Quλ·oŋiaq* will eat you, it is said! | *Arnalik* ceased, went out and came in (again) | carrying in the supporting beams of his tent, | and began to set to work

[1] The word is used to signify a caterpillar, but has probably been used about larger animals (eels or snakes?) in previously inhabited districts. Kleinschmidt (Dictionary p. 154) connects it with the verb *quλ·up·oq*, is folded together, lies in two (or several) layers.

[2] *suaŋ·o·rin·a* Obsolete. The expression may possibly refer to the son: He takes violent hold, or He is a bad one when he thrashes, it is said.

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to make arrows. He finished so many that he could fill two sealskins with them. The others went to bed, but *Arnalik* was still up. — The next morning when they wakened, *Arnalik* was gone. He wanders off over the plain. At the entrance he sees some smoke: | what! that is *Quλ·oŋiak* who is breathing. | He stopped and dug a hole in the earth, where he laid the arrows he had made. From there he went over toward it with his bow and only two arrows, and when he was so near that he thought he could be heard, he bawled out loudly. When *Quλ·oŋiaq* heard his voice, it suspected that it was the man *Arnalik* and moved toward him. *Arnalik* fled away and it followed after him. When it approached rapidly, he stretched his bow and laid one of his arrows on, turned around toward it and shot it in its *ers·iŋa* (the place between the neck and the shoulder close behind the collar-bone). He laid another arrow on and hit it again effectually in the same place. At full speed he reached the hole that he had made, and cast himself into it. *Quλ·uŋiaq* passed without noticing him and moved on. With the arrows that he had left there he shoots it again and again, each time opening the hole and closing it again. Once when he had shot at it acting thus, oh how dark it became (*qaŋale ta·rpaλ·ȧk*) down there! he could not get any opening to the daylight and now he understood that he had killed it. *Arnalik* could not come out and began to smother. He set to digging (with his hands) and steadily shoveled the earth loose. *a·rim·e*[1] (there you see)! finally a hole to breathe through! when he had recovered a little, he dug again, and when the hole was big enough, he went out. After he had moved along the side of the animal, he caught sight of its face, which was like a large human face — you may be sure he was frightened (*ersinaraluaqa·q*)! — When he had come home, he said nothing to his countrymen. But when it became night, he said: over east there I have

[1] an interjection indicating that it happened as expected.

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killed *Quλ·uηiaq*. When you have had your sleep out, then fetch it. — They brought it home, and thereafter, it is told, reindeer again came back in numbers to the district.

[In the remainder of this long tale it is related how *Arnalik* fights first with an *amaroq* (wulf) and its young, then with a *siχ·ut·ɔ·q* (a very rare kind of seal), and then with a large bear which has its haunt out on an ice-mountain. Every time the reindeer decrease and *Arnalik* has a talk about it with his mother, who tells him the reason. Every time he returns home he does not say anything about it before in the evening and he requests the others to fetch the slain animal. But to each hunt are attached a number of different details. The tale ends by mentioning the renoun which *Arnalik* wins: "he slays the largest animals on sea and land, as besides him only *Qa·suk* used to do".]

6. Four birds in human shape.

(Thomas Magnussen, Jakobshavn.)

Once upon a time a man went out hunting. When he caught sight of a house, he went in and saw a black man on one side in there and a white man on the other side. They had a servant. The black man said: *Qɛ·oqe*, fetch some meat! when the servant had gone out, the housemate (the white man) said: it is an aperient that he will give you to eat. — Is it an aperient? — It is a loin, the loin of the last she-seal that I caught. — The white man said: *Qɛ·oqe*, fetch some meat! When the servant came in, the black man said: it is small trout[1] that he will give you to eat. The guest said: we are in the habit of eating that kind of fish. Then the black man became angry. The housemate said: Fetch the funny one (*tivsinaq*). The

[1] *eqaluaq* in North Greenland also used of a smaller fish (Gadus aeglefinus).

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servant fetched him. While he (the funny one) was on the way, one could hear his laughter (*iλ·arpaluwa erserpoq*). When he came in, they saw a snubnosed contemptible being with a sea-scorpion between his legs. He said: today *Itɛ·tivis·uaq* and I rowed after a seal, so that the blade of my oar got some cracks.

The man (who was out hunting) went out, and when he looked behind him, he saw a raven, a gull, a *Qɛ·roqe*[1] and a falcon sitting on the slope of a mountain. Then he understood that it was they who had shown themselves to him in human shape.

7. The little Angakoks from the North Land.

(*Iλ·umiut*, Jakobshavn.)

A place with very large houses, large rooms in them, many seal-hunters. During the winter, sometimes seals in great numbers, sometimes no seals to be had.

At one time, when the scarcity of seals threatened starvation, some of the Innuits began talking about the big angakok [*aŋak·ɔq*]. He lived far away, to be sure, but since they were longing for seals, the Innuits summoned him and promised him payment. The angakok came. Night and darkness came, and they let it become dark in the big house; all the lamps were put out. The angakok was practising witchcraft. All night they keep the lamps extinguished, and no one utters a word. Then the angakok spoke and the lamps were lighted.

The angakok, having received his payment, returns home — and the hunters set out hunting. Later they come home and say as before: no, no seals have come! the angakok must have lied!

They summoned another angakok, again extinguished the lamps and made the interior of the house dark. Again there is practised witchcraft.

[1] The meaning of this name was unknown. In East Greenland it means a kind of sea-bird.

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There were two children there in the house, two orphans. When it had become quite dark in the house, the Innuits could not see the angakok. Only these two orphans kept their eye on him. Just think! tqese children were themselves angakoks; therefore the angakok could not get away, but remained in the house[1].

One of the children says: only look, the angakok has not gone away! make a light in here!

The lamps were lighted; the big angakok got angry: very well! just try the children, let them get you seals!

The other child said: bring me the boat-skins! They brought the skins in and laid them on the floor.

Now the two orphans extinguish the lamps and put on their bird-skin garments, then get down on the floor and run on top of the skins circling along the edge of them. Away it goes into the ground. The Innuits look for them through the window — down there on the beach they come out — they go out over the ice and disappear.

The Innuits wait for them.

Finally it begins to dawn. All night the children have been away; then they come back through the floor and take off their bird-skin garments. Look, they say, seals in great numbers! but none of you must get two, each of you shall only capture one!

Away go the hunters out on the ice, along the edge of the coast — and you may be sure they caught something this time — a miracle, the number of seals there was now! They all captured only one seal apiece.

The children relate something that is amusing. That time when they had departed and were on the way outward toward the west, they came to a crevice which it was impos-

[1] This remark implies that the angakok. when he practised witchcraft, was supposed to leave the house in a supernatural manner. This is often alluded to in the tales. The angakok is supposed to go to the water-witch.

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sible to get over. They got a stone laid over the crevice and walked over on that — now they saw a house and came up to it. The entrance-passage was dripping with water. They went in. A large being in the shape of a woman[1] was alone in there, her hair was in disorder and she was angry. The children took hold of her and arranged her hairs and washed them. She thanked them (expressed her pleasure) and ceased being angry.

What do you two want? she said, for a long time I have not seen a human being.

The children said: in need we come here, to ask you for seals.

The woman said: Then let me know when you are about to go home! —

We are about to go home now, they said. The big woman then spoke over in the direction of the hollow under one of the stump-beds: many seals come forth! and over in the direction of the other stump-bed: many white whales come forth! The animals began to appear. When a pretty seal comes forth, the little girl (one of the children) grabs it by some of the hairs, winds them around her finger and pulls them off.

Then the big woman is said to have said: Well, now there are many! and further: in the beginning each hunter must capture only one seal; if each one captured two, the seals would give out for them.

So far the children. Thus they related. The next few days it was quite surprising, the number of seals there was! The Innuits began to be very fond of these children; for they were angakoks.

Once there came a woman from the neighbors in to them. My husband has caught a beautiful seal, she says and tells what it is like.

The little angakok-girl says: I made a mark on one of

[1] This is the water-witch, *arnârquas·a·q*.

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them by pulling some of its hairs off. Pay attention, let us look for it!

She spread the sealskin out. Can you see, there it is! the trace of my fingers, where there is no hair.

The visitor said: It might be a pleasure for you to own that skin! and so the angakok-child received it.

After that a number of white whales and seals were caught.

When summer approached, all the hunters went south for reindeer hunting. Here the northerners and the southerners met each other. When there had already been caught a number of reindeer, it was frequently mentioned that there was a great angakok in the south land, a rival of the angakoks of the north land.

Which has the greatest angakok, the north land or the south land?

Day after day they speak about this, but it is impossible to find anyone who will compete with the one from the south land.

Then one of the angakok-children said: I too am your rival!

The great angakok from the south land answered: You are a child! I disdain you.

The child, who wished to compete with the old one, said: If I lose, the old one shall bury me.

The southerner gets up, and all the Innuits from the north and from the south look on eagerly. He takes out a knife and cuts off his hand with it. He throws it up in the air, it falls down and grabs hold of the grass. Then he takes it up and puts it on him again.

The child from the north land now takes a knife and also cuts off his hand and throws it up in the air, so that it falls down and grabs hold of the grass. Then he takes it up and makes it fast again.

All the Innuits were struck with surprise when they saw the great angakoks compete with each other.

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Now the old angakok does not want to continue any more. But the child from the north land says: Come, let us try once more! — The old one says nothing. The boy goes down to the beach where the kajak lies, and takes out the seal-lance and thrusts it against the sea. How it squirted up on all sides, just as the ice becomes in warm sun-shine. He glides out over the sea without sinking in. Eagerly the Innuits gaze at him.

When he has finished gliding, he gets up, and the northerners shout: he is invincible! — The southerners' angakok would rather not try it, but his countrymen pressed him: Well, will it come to anything! otherwise you always used to say that you are the first.

Although he does not care to at all, yet he has to go down to the beach. He takes the seal-lance and thrusts it against the sea, and it squirted up, for the present. Whatever else he thrust it against, it flew to all sides. Then he began to jump out.

The northerners shouted: Only look! the big angakok is gliding at a fine rate! — How it squirted and splashed! He plumped into the water and that was good for him.

They laughed with all their might, all the many Innuits who stood and looked at it.

The big angakok from the south land went shamefaced into his tent. Otherwise the northerners generally used to lose. So far the tale goes. The northerners carried off the victory. Here it ends.

8. *Perʌerqoja·q* (The Simpleton).

(*Niarqornarsuk*, Egedesminde).

[This tale is obviously a European folk-tale which has undergone some revision in Greenlandic tradition and has got a good deal of Eskimo colouring, however, without losing its foreign character. It is of course of late origin].

Perʌerqoja·run·a | timiusiäs·a·seqarʌune qaliämine | un·um·at in·arput aĩne kisiät ilaŋaluqo | sinilersöt as·arnersoaq tikiup·oq |

qalia·lo tiŋip·a· | perλerqujàp timiusiäs·a·tiŋua tama·t tiŋiλ·oŋo | täs·alo a‴λ·amik nerisäs·aqaratik | aĩna·ta oqarφiŋa· | qiŋaĩna-qa·tit perλerqoja·q | as·arnerup inua akilerqu·k | perλerqoja·q nunamut a·‴λarpoq | tama·ne iŋerλàλ·une tama·na·ŋaq torλo-la·rpoq | as·aĩnerop inua akilerλe | ta·mak aniλ·aŋ·ilaq | kiŋuλ-ermik perλerqoja·q as·orsuaq nipitorsuaĩmik torλola·rpoq | ila ila as·aĩnerup inua akilerλe | in·arsoŋuamik aniλ·àp·oq | inuk nep·iwiuk miλ·ia·nik tiŋumiartoq | täs·a as·arnerup in·ua perλer-qùja·muλ·o tun·iup·a· | perλerqùja·q oqarpoq | ta·‴nakasik süs-aŋ·ilaq | uwaŋa nep·iwiup miχλ·ianik peqarpoŋa | as·aĩnerup in·ua oqarpoq | takùs·uàt | ta·‴walo nep·iwiup miχλ·ia· tiŋumia-nut is·uilerpa· | perλerqùiäλ·o is·iŋilerpa· | etc.

Perλerqoja·q had some meal in his garret. | He lived alone with his mother. One evening when they had gone to bed, | a violent east storm came on while they slept, | and took the roof with it | and took all that little quantity of meal that *Perλerqoja·q* owned with it | and they had nothing else to live on. | Then his mother said to him: | that is vexatious! and it is your fault *Perλerqoja·q*. | Now you must get the lord of the east wind to give it back! | *Perλerqoja·q* starts off for the country | and when he has got far enough, he calls out in the air: | The lord of the east wind must pay! | — in vain, he would not come out. | Again *Perλerqoja·q* calls with a loud voice: | *ila*, *ila*, well! well! the lord of the east wind must pay! | From a little bluff he appears, a human being with a table-cloth in his hands, | which he offers to *Perλerqoja·q*. | *Perλerqoja·q* says: | that useless thing is not worth anything, | I myself have a table-cloth. | The lord of the east wind says: | (now) you shall see: | Thereupon he begins to spread out the table-cloth, | and *Perλerqoja·q* pays close attention. | Give bread, says the lord of the east wind. Give porridge, he says and spreads the cloth out more. Give sweet things, he says — and everything comes. He gives it to *Perλerqoja·q*, who returns home with it. Now *Perλerqoja·q* spreads the

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cloth and says: give bread and give porridge! — in vain; nothing comes. Then he again goes to the lord of the east wind: the cloth is no good, give me some other compensation! The lord of the east wind takes out a pair of scissors and cuts in the air with them, whereupon a number of clothes fall down. *Perʌerqoja·q* takes the scissors with him home and on the way he meets the old Sea-witch. Give me something to drink, he says. She answers: yes, and I shall look after what you have in your hands. When he had finished drinking he proceeds on his way, and when he has come home, he takes out the scissors and cuts in the air with them. But no matter how much he cut, it was in vain, nothing fell down. Again he went to the lord of the east wind and asked him to make compensation. This time he gave him a big hammer[1] and said: did you meet anyone on your way? *Perʌerqoja·q* answered: I asked the Sea-witch to give me some water to drink. — Then that was the reason, said the other one, when you began to drink. Do not say anything about the big hammer if she wants any pay next time, but kill her with it! *Perʌerqoja·q* sets off and meets the witch at home. He kills her with the hammer. Then he takes those things which the witch had charged for giving him a drink: a table-cloth, a pair of scissors and a lamb — all of it he takes with him home, and after he has gone in, he takes to patting the lamb on the thigh; immediately the money rattles on the floor. He spreads out the table-cloth; and immediately there is food on it.

When the king had heard about this, he paid a visit to *Perʌerqoja·q*, accompanied by his officers. What does *Perʌerqoja·q* do? He fills a hog's bladder with ashes and lays it on his mother's stomach. When the king comes in, he pulls a knife out and sticks it into his mother, deep down in the hog's bladder. His mother lets on that she is dead.

[1] Greenlandic *mok·orte*, Danish mukkert, Dutch Moker.

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Why did you kill her? asks the king.

Perλerqoja·q takes a hen and bends down to his mother's ear with it, so that it bawls out loudly. His mother rises. The king says: I should like to own that hen! I shall give you much money for it. *Perλerqoja·q* gave it to him.

Now when the king had returned home he stuck his own wife with the knife. Then he screamed into her ear, but she did not move. The king became angry and went together with his officers to *Perλerqoja·q*. But as soon as they stepped in, he said: Hammer, strike them down! One by one they fell, and when the king remained almost alone, he said: let me go! you shall have my daughter.

Thus it happened that *Perλerqoja·q* got the king's daughter in compensation.

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II. Old-fashioned Songs

(*iwŋertut, iwŋerutit*)

especially from the Umanak (*Oommannaq*) District.

a. Songs and nursery-rhymes from *Illorsuit* (Igdlorsuit) 71° 15′ N. lat. on *Oommannaq* Fjord,

communicated by Martin Mörch († 1903) and by Simion.

1.[1] *aqis·eq pawane narsˈa·tˈä·ʻme apukˈa·tˈä·ʻme*
the ptarmigan up there on the little plain | on the new-fallen snow

is.it·a·ʻik[1] | *tunˈut·a·k* | *a·ʷpal¸ut·uˈät·ˈa·k*[2] | *kajˈortuät·a·k*
its eyes | its eyelids | (are) tolerably red | (are) tolerably brown

nulˈoŋ·uˈaq akˈornanˈe itikulˈut·ʷiˈaq
the little rump | in its middle space | a tolerably little tiny anus

[1] cf. no. 105 (*Arq.*).
[2] Notice throughout the song the use of the dualis.
[3] In spring (in mating-season) the eyelids of the ptarmigan become red.

This song I took down in several places, among others, at *Arqittoq* (68° 13′) south of Egedesminde, where the following variants are found at the end: *nuloqne akornane it·ia·ʻna* (its anus) or *nuloqne akornane iserϕiluk* (rima).

2.[1] *awanˈɪŋ·ɔ·q qilˈaŋ·ˈɔ·q*
up there in the north, it is related | at the sky's (it is related) |

kiλ·ɪŋanɪŋ·ɔ·q arnɛ·lɛ·sɪŋuaq qɔt·a·ʷsa[2]
boundary (it is related) | (lives) the little Arnelisik | Quttausaq

tarqˈam·iˈut·ˈa·ʷsa[3] *kiä puˈja·*[4] *o·ma puja·*[4]
Tarqammiuttausaq | who has got her? | he there has got her

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samiutarqarma *talˡerqis·sqˡarma*[7]

because he has something[5] on his breast | because he has a fore-

a·t·a·liut·a·[8] *tiχ·a·[p]* *aχλ·atʊ·p*

paw[6] on him | listen! (?) | the male seal's | the young seal's

paniäta *naᵘkiäp pania* *malerqäp nulia*

daughter (has him) | the harpoon's daughter | the roused (pursued)

awɪn·eruluk

seal's wife | a poor divorced wife |

[1] Cf. no. 101. [2] Q. means properly heaped measure (filled with heaped measure) [3] from *tawqarmioq*, the kajak-knife, which is stuck in under the cross-straps of the kajak [4] *puja* = *piwa* [5] namely: an amulet [6] namely: as an amulet [7] from *taleroq* and *-isˑarpoq* (to supply oneself with something, take it along) [7, 8] these words seem to be somewhat corrupt in form.

3. *ata* *pawäŋ·a* *koŋkɔrtɔrpalut·ɔr-*

listen! | up there (in the east) | one that makes a big

s·uaq *un·ua·nersuarme* *erqɾ·λ·ara·ŋama*

noise: kongkok! | in the middle of the big night | just as I waken

apus·uak·uλ·o *sisɔ·rutiλ·arasuäloŋalo*[1]

and through the deep snow | I (both) glide down at a rapid rate with

kala·λ·iλ·arasuäloŋalo[2]

the snow | (and) I at a rapid rate .... | (all the while hearing:)

kuŋ kuŋ kuŋo··

kong kong kong ....[3] |

[1] The meaning of this and the next word is uncertain. *sisɔ·rup·a* = (the snow) glides down in masses and drags him with it — *-ti-* = considers — *-λ·arasuar-* = at a rapid rate — the whole perhaps: it seemed to me that the snow glided down over me at a rapid rate.

[2] *kala·leq* (in plural) *kala·λit* is otherwise unknown in North Greenland. In South Greenland, it means "a Greenlander".

[3] This onomatopœia occurs also in the tales (cf. Rink who thought that it was connected with one of the Irokesian traditions. Esk. Tribes p. 21).

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4. *eqaluäŋuit* *nuliäta oqa·ᵘse* *nu·ŋmit*
the little salmon-trouts | their wives' words[1]: | from the point

kanäŋa *nuisara·ŋame* *jä jᵉ·* *paᵘtinijuk·o*
down yonder | when he appears | (she weeps) | look! his kajak-oars |

aᵒpˈäλˈarλuŋit *jäᵉ jeˑˑ* *pˈa·ᵍtimˈi-s·inˈaˑᵢ*
he has got red (with blood) | (she weeps) | his kajak-oars' edges[2] |

qaqorsiλ·arλoŋit *jä jeˑˑ* *mä·raŋuane*
them he has got quite white | (she weeps) | his own little children |

qiasartoŋuit *jä jeˑˑ* *suna·ᵘφaᵘna*
the little ones, who are often to weep | (she weeps) | it was exactly

käᵘλ·ormik·a·ᵗt[4] *jä jeˑˑ*
with that[3] | that, with which they struck him dead | (she weeps) |

[1] the widow's song of lamentation when her husband, the male salmon-trout, has been caught (struck dead). [2] the edge of the kajak-oar is of white bone. [3] i. e. the kajak-oar [4] Kl. Dict.: *kavdlormigpâ* strikes against something with the oar-mountings (*kavdloq*).

The following is a variant from Jakobshavn (Thomas Magnussen) in Disko Bay:

The salmon (*eqaluk*) is lamenting her husband who perished in a kajak:

When he came out there by the point of land, *jäwjeˑᵢ*, how red his oars used to shine, *jäwjeˑᵢ*. His children go out in vain (to look for him) *jäwjeˑᵢ*, his grandchildren go out in vain (to look for him) *jäwjeˑᵢ*.

5. *Antoˑŋuaraˑ* *antoˑŋuara* *sunᵉpaŋˑɔq*
my little Anton | my little Anton | where are they said to be |

qataŋutŋuatit *pawane* *pawane*
your little sisters and brothers | east (up there) east (up there) |

pawanerujusˑuaq *qaᵘλunaˑrsuit nunarsuáᵘnˑe*
far far away in the east (up there) | in the big land of the Europeans |

iᵘλˑᵢŋuaq *suˑsasoq* *kisimᵉtoŋuˑλutit*
you little dear one | it makes no difference | if you are quite alone |

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tama·nɛ·toɳʊ·λutit *ata·tarsuɛɳ·ɔ·q* *ilâɳisäs·uât*
(while) you being here | your big father, it is said | him you will be

tama·nɛ·λutit *o·m·an·arsuarme*
able to live with | (while) you being here | in (or on) the big *Oommannaq* |

6. *i·a·* *näλ·inäλ·armat* *okalɛɳuaq*
| i-a | that time when it was to be pitied | the little hare

toquλ·armas·ut (?) [1] *ino·ɳerqo·rqa·ᵊq*
because they eagerly killed them | it is surely not living (any longer)

nako·ɳ·erqo·rqa·ᵊq *isɪk* *qiʷλ·arutiλ·ɪk* (-*λäk*) [2]
it is surely not strong (any longer) | the shining eyes |

ers·ɛɳa·k·a *näλ·ɛɳa·k·a*
I am afraid of them | I pity them |

[1] *-masut* for *-mas·uk*?

[2] dual. The adjective was first used in the plural (*-λ·it*), afterwards with the ending (*-λ·äk*), which probably indicates the dual. — M. M.'s variation: *qiwsa·rutiλ·it* (or *-λ·äk*) seems to be meaningless.

7. *am|art‚oɳu|aq* *aja·· ja··* *m|äs·äɳu|ar-*
a little one who is carried in *amaut* [1] | (a little?) one

pa|t·oq [2] *a·ja·aja··* *isersuäk* [3]
who is accustomed to being lulled asleep | its two big eyes

sânimut *isɪɳis|or|su|ät·a·k* [4] *o·na*
sidewise | two right big ones, which eagerly stare | he there

sanɛ·liara·ɳ·a [3] *qäʷn·e* *sanɛ·lia·raɳa* [3]
he moves along side of me | on top of me | moves along side of me

am|äs|·äɳ·uaq *quliwsiusäs·a*
(he is) a little capelan (fish) | which is to cook over the lamp |

[1] the hood sewed fast to the back of the fur coat and intended to hold a child.

[2] Kl. *mavsarpoq*, lulls a child asleep. *-pât*, old-fashioned suffix? = L., *-pakpoq* = is accustomed to (cf. Bourquin, Labr. Gr. p. 260, no. 25 and 101).

[3] dual (obsolete). Now only in the plural (*isersue; -ta·it*). [4] *saniliaq*, one who moves along side of something; spouse.

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8.[1] *kus·äs·uaq* *iniminit* *aniλ·erqa·°q*
the big wheat-ear | from its nest comes quickly out

[1] cf. no. 13 (*Iλ.*), no. 59 (*Iti.*), no. 70 (*Omnt.*), no. 103 (*Arq.*).

From Jakobshavn in Disko Bay I have several variants of this song:

a. When the wheat-ear came out of its nest, it said: *i·jas katuis i·jas katuis si·t tartata* take me to husband. Why do you lament your husband? him the striding one (*pisuk·a·q*), the big striding one who sniffs after worms between the bushes. — You I do not want, because you have too high a forehead, have long feathers and are short-necked. — He (or she?) is a master at speaking, is given to jesting speech, he was the one that began to speak.

b. Conversation between a wheatear and a snow-bird.

When the wheatear came out of its nest, it said: take me. — Oh, you I will not take, since you have too high a forehead and too big feathers. Ah, my children are not dirty and I am industrious at sewing. — The wheat-ear: take me, your children are dirty and you are not industrious at sewing! — The wheat-ear is a master at speaking, he is given to jesting speech.

b. Old Drum-songs from *Iλλorsuit.*

9.[1] *a·jiŋa* *a·jiŋa* *a·jiŋa··* *kät'äŋ·aja··*
he over yonder | he over yonder | he loses it[2] |

[1] cf. no. 62 (*Qarj.*) no. 51 (*Iti.*) [2] scil. the drum.

10.[1] *malàŋ'as·u'arsuk* *q'umaŋ,a-*
one that lays his head all the way back (strutting) | one that sits

su'arsuk *qernertuin·arsuaq* *ha·-ha··|*
quite crouching (hunchbacked) | the big one which is quite black

[1] cf. no. 74 (*Omnt.*).

11. *ia· màn·a* *artulerpara*
| this one (or now?) | I am beginning to lose my power over it[1] |

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qila·ᵘtiŋa man·a artulerpara
my drum | this one | I am beginning to lose my power over it |

[1] i. e. I am beginning to be tired of using it (the drum).

12.[1] (no words) *ija· je·· j·e ja·· j·a je· je·* etc.

[1] cf. no. 25 (*Iλ.*), no. 55 (*Iti.*).

c. Drum-songs from *Iλλorsuit*

communicated by Simion.

13.[1] *kusagáᵘs·ȧk*[2] *iniminik anilˑsqa·ɔq*
the naughty wheat-ear | from its nest | (it) comes quickly out |

wijutɪ'ʊ·ᵘ aj·a ha··ja·ja·
wiutiu! (it whistles) |

[1] cf. no. 8 (*Iλ.*), no. 59 (*Iti.*), no. 70 (*Omnt.*), no. 103 (*Arq.*).

[2] *kugsak* (Kl.) a kind of wagtail; *-kaᵘs·ak*, bad, damned — is used humorously as a petting attributive (is rare south of *O·m·an·aq*).

14. *awan·aq qoŋujup·oq qoŋujoŋuäloqa·ɔq awan·arλe*
the north wind[1] | it smiles | finally[2] it smiles | but thou, north wind! |

u'äᵘp·'aᵘk·'it[3] *awȧn·aq iŋup·aᵘkit uäᵘp·aᵘk·it*
I deceive thee | north wind | I slander thee | I deceive thee |

[1] perhaps as a proper name [2] *-ŋuälerpoq*? [3] *uäᵘp·a·* (Rasm. uápâ).

15[1] *kilerniχλ·o qim·ia qim·ik··a·ŋ·ɔ·q awa··j·a··ɪ*
and Kilernik | his dog | which they have strangled, it is told

iχλ·ērmuŋ·ɔ·q pituλ·oŋo qim'ik·'ȧ·'ŋ'ɔ.q awa··j·a··ɪ awa··
by tying it to the stump-bed, it is told | which they have hanged,

a·iawa·iaj·a··ɪ suk·amuŋ·ɔ·q awa··ɪ a·j·ȧ·· itˢ'erqum'ik
it is told | on the upright beam in the house | which they have let

im,ik·'a·ŋ·ɔ·q aja·· aχλ·un'a·ᵘsan'ik nerisik·a·ŋ·ɔ·q
drink old urine[1], it is told | which they have fed, it is told, with

awa··ɪa·j·a··
twine (or hemp) |

[1] *akiore·sut*, reply (to the challenging drum-song of another) [2] *iteroq*, urine containing ammonia is used for lye.

16. *ij'a·man·'a·* *tuk·un·v·ŋ·a | a·ij·a···*
there now | I sleep in the neighbor's house |

17. *qama· jatj·e··a jatj·e··a·*
in there | ....

amersɔ·q *isumaqäŋ·ilaq* *sunaŋɔ·runa*
18.[1] he with the big skins | has no sense | what does it mean?

tikerqa·ra"n·e *ajoŋ·it·ɔrsuaq* *sun'a·φ·'a·"n'a*
when I first came to him | he was exceedingly good | but what is

ajɔrtɔrso·"wɔq *erneqaranile*
now the matter? | he is in a high degree bad (evil) | but having no son |

isumaqäŋilaq
he has no sense |

[1] *iwertut*, challenging drum-song.

19.[1] *n'a·"k'tŋ,aluar'a"k·it* *n'a·"kiun'a·rp'a"k·it*
I had formerly sympathy with thee | I have no longer sympathy

qaŋatäŋ·uarme *ineqarni'a·lerawit*
with thee | in a little rocky cavern | when thou beganst to want to

näλ·tŋijun·a·rpa"k·it
dwell | I have ceased to show thee sympathy |

[1] *akis·uta·* the answer (to the former song).

20.[1] *nap·arkartäp* *ernersua* *mam·aja·* *mama·jt··*
Napparkartak[2] | his big son | it tastes aja it tastes aje

mamaja·tje··a·· *im·aqa·* *usus·ua*
it tastes aja aje ia·[3] | how is it I wonder | his big membrum |

ilik·ale[5] *tiχ·uλ·is·up*[4] *nats'ermuλ·e*[6] *nerφpä-*
my fellow-partisans | let them take him | to the floor | let him lie

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λ·älˑe *mamajaˑjˑeˑˑaˑ* *najumasäkˑit*
on his back | it tastes aja aje a | that which you wanted to smell-[7]

naˑwakˑit *perqiçˑarniarλutit*
I smell it | -to make yourself well |

[1] *iwernˑeq*, challenging drum-song [2] the name means: a stick or upright staff, which turns about [3] perhaps referring to the revenge ("revenge is sweet") [4] *p* instead of *k* [5, 6] *-le* probably serves here as an affirmative or encouraging appendix according to the usage current in Labrador (Bourq. Labr. Gr. § 296, Note) [7] ?snuffingtobacco, coffee, etc.? *naju-* for *naˑiu-*

21.[1] *usutˑˈia* *aŋˈopˈiŋokˑ*[2] *tikiŋaˑŋatit*[3]
Usuttia | your little husband (it is related) | when he

qoŋasiaŋut[4] *erqiλˑoŋo*[5] *qisˑertartalikaʷ-*
comes to you | about his neck | you embracing him | he is accustomed

sˑäλˑaraɔq[6] *ajaˑjaˑˑjˑaˑja*
to begin to jump about odiously |

[1] cf. 2 [2] *-ok* perhaps instead of *oˑq* [3] *tikiŋ-* for *tikik* (*ŋ* a nasalized *k*?) [4] *-aŋut* for *akut* (or *akˑut*) [5] Kl. *eqípâ* [6] Kl. *qigsserpoq*, jumps, vaults (without aim like children in play).

22.[1] *ˈoˑmanˈätˑˈaˑmut* *tikeraˑrawit* *majoaler-*
to *Oˑmˑanˑätsiaq* that time you came on a visit you went

putit *aˑjˑaˑjˑaˑ* *nˈoˑarˈiˈarawˈit*[2]
up (to the houses) | | when you appeared (in there) |

suna takoŋˑilât *sinitˑuλˑiukˑo* *sälasɔr-*
you did not see anything | but they slept there | but she lay with

suarλe *paˑɯsutˑˑ-*
her arms spread out (on account of the heat in there) | you also

ilerujät *ipˑaˑnaˑŋut*[4] *sinitˑɔq*
began to feel her[3] | over the flap of her trousers | while she slept

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takoriärām·a *näλ·ä·narputit* *qiwi¸uligä^{w}s·ak¸una*
when you saw me | you laid yourself down flat | she was thickly covered with down[5].

[1] *iwerneq*, v. no. 18 (note) [2] *no·ariarpoq* *Kl. [3] or: to ravish her cf. Kl. Dict. *pássúpâ* [4] *ip·at*, the flap (the front side highest up) of a pair of Eskimo trousers [5] so that it can be seen on you now.

23. *qawoŋalo | awoŋalo | te·ŋasaräλ·artoŋa | a·riλ·imäk·o tama·^{t}sa | nuliäk·a |*

Both south | and north | I had got a desire for mating | and it happened as I said: these | they all | (they became) my wives |

24. not used here

25. not used. cf. no. 12 (*Iλ.*), no. 55 (*Iti.*)

26. *säwna·^{t}ja ajaį·a ers·ıŋınaqäŋilätit*

He down there (in the west) | a·ja ia· | there is no one who is afraid of you! |

27. not used

28. *ja· ja·· | umerλota·^{t}nik | tıŋusiomineq | ja· ja·· ama·ja ama·ŋja·· |*

| A part of his mustache | one (i. e. I) should like to take it |

29. not used

30. *ut·otoriartorpoŋa*[1] *| akut·usut ut·o·nik |. awan·ersorsuaq | q^{l}äwλ¸uni^{l}äleruj^{l}oŋa | o·ŋa | akun·iλ·oŋa | sermiarsun·ut | ne^{r}qis·ä^{w}n·ik | tunî m·aŋa | orsoqaŋ·it·uŋ·uamik | ima·^{l}lo | oqarλune | nıŋa·^{3}qaraλ·ıŋ·ik·u^{w}t·a | nerıŋiqajaqa·^{w}tit |*

I am on a journey to get vulvae | opened v. | (it is) a tremendous north storm | I am also on a journey to the trading-place | hither (I came) | interrupting my journey | to Sermiarsuit | meat | one gave me | without blubber on | and thus | saying | if we had not got a son-in-law | (then) you had not got meat |

[1] from *ut·^{3}uk*, vulva.

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31.[1] *ɪm·aqˡa* | *qäwkoa* | *uluarqɔrtɔ·q* (or *uluarqut·ɔ·q*) | *a·ʷ-λ·arn·iarit·ᵉe* | *at·orniäŋ·uarit·ᵉe* | *ˡuilulˡɪ̃m·ut* | *kˡaniulˡɪ̃m·ut ɪm·aqa·· ja··ha·· ja·ja··*

How are matters | (with) them down south | (with) him with the thick cheeks | please travel (2. pers. plur.) | please take the opportunity[2] | to the mussel-place | to the place of sea scorpions | how are matters | *aja . . .* |

[1] cf. no. 63 (*Qar.*) [2] or perhaps: keep on, be lively!

32.[1] *awa· qanorun·a* | *alarparse* | *tusarɪŋa* | *nät·sersuaq iluliäŋ·uamut* | *pitulˑoŋo* | *toquk·a·* | *uaŋa* | *aŋuwɪŋariarä·wne* | *kɪŋo·wät·akaʷs·äpɔq* |

| How is it with him | your Alapa[2] | I have heard about him | (that) a hooded seal | to a little ice-bedecked mountain | he bound it | the one that he killed | I | when he put his seal-lance in it | it sprawled wildly (?) |

[1] cf. no. 91 (*Omnt.*). [2] *Alapa* is a historical person (born about 1810?). He belonged to the Eskimo settlement *O·m·an·ätsiaq*. v. *Atuagagdliutit* 1899, no. 7 (p. 97).

d. Drum-songs from Cape *Uperniwik* (*Uperniwiup Nʊ·a* on *Oommannaq* Fjord).

33.[1] *j·a··ja·* | *quλ·eˡäs·oŋ·a* | *a·jä·ja·* | *uj·ˡäsiso·ŋ·a* | *tupˡa-siuso·ŋ·a·* | *uja·siso·ŋ·a* | *aja·ja·* | *quλ·eˡjäs·o·ŋa* |

ɪa-aja | I lose (have lost) my lamp | *aja aja* | I am going to search (for it) | *aja* | I am going to search for the tobacco | *aja* | I am going to search (for it) | *aja* | I have lost my lamp |

[1] Tobias M. said that this song referred to an event which he remembered hearing about. There once lived an old couple in this place, Cape Uperniwik in Oommannaq Fjord, which had formerly been a small trading-place. The husband was called *Inaluaq*, the wife, *Unaralak*, and they were both *angakoqs*. They were born over on "Ubekendte Eiland" at *Illorsuit*, which at that time (about 1845) was still only a little Eskimo settlement. One day they took a trip over to the island together with another family for the purpose of reindeer-hunting. The family they were with had taken coffee and sugar along. The two old people remained in

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their tent while the others went hunting; Unaralak had previously seized an opportunity to steal their sugar from them, "because he was evilly disposed toward them". But they did not notice anything and departed. When they returned, they said, "we had no sugar for our coffee up on the mountain", Unaralak began to sing. In the meantime, one of the young unmarried women had noticed that Unaralak had a piece of sugar which she was eating, and she told the others what she sad seen. Unaralak heard this, and then it was that she began to sing the above song. After that she came back to the others and drank coffee with them, returning the stolen sugar. But she and her husband had bewitched the sugar in the absence of the others and those who ate any "died of it", related Tobias.

34.[1] *usut·ia* | *ɛm'a·qawut'it* | *aŋo·pɛŋop* (*aŋv·tɛŋ·v·p*?) | *tikɛŋa·ŋ·ate·* (or *-atit*) | *qïs·ertartaligä^{w}s·äla·ra·^{w}tit* | *tikera·rama* | *tikit·araŋama* | *nerisäŋilaŋa* | *aja·aja·* | *qaq·amut* | *pawoŋa* | *mäjoartarpoŋa* | *aja·* | *sorlo uwaŋa* | *qimik·a^{w}s·aŋ'una* | *nuliartogä^{w}s·äk* | *sorlo uwaŋa* | *itoqutikä^{w}s·äk* | *nuliartokä^{w}s·äk* | *ija·ja· äja··*

Usuttia | are you thus[2] | your little husband[3] | whenever he comes home to you | you are accustomed immediately to begin to jump about ("rut")[4] | when I have been out visiting | when I am accustomed to come home | I do not (even) take time to eat | aja | up the mountain | up there | I am accustomed to climb up | aja | just as if I (am) the poor dog | which ruts, the poor thing (or rascal) | just as if I | (am) the poor old he-dog[5] | which ruts, the poor thing | *ai äja* |

[1] cf. no. 21 (*Iλ.*) [2] or: you are such a one, that ... [3] incorrectly apprehended or written (from *aŋupit* + *qo·q* or *aŋutiŋ·uaq* (genitive *-ŋ·v·p'*)). It probably means the same one as the singer himself: I. [4] as in times of copulation [5] *itoqut* the strongest dog in a team, the leader

35. not used

36. *Isɛŋälo·pisia* | *im,ikaj'utukä^{w}s·ä't* | *uɛŋers'älɛ'ersu'ak·a* |

Isiŋalλuk's[1] nith-song: | the rascals, who ask (me) to work for them | I will whistle at them[2] |

[1] name (of an *angakoq*) meaning: the poor foot [2] "I don't care a fig for them".

37. *a·^{w}λ·a·^{w}kata·ja* | *awa qɛŋamɛŋut* | *tul'uka· qɛŋamɛŋut* | *ikat,a·^{w} nwarnermit* | *a·ja·ja·*

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38.[1] *am'a·· a·ja | it'ɛŋuar'a | tak'orqil'ara |*

My little anus[2] | let me see it (him?) again |

[1] cf. no. 66 (*Qar.*). no. 53 (*Iti*), no. 80 (*Omnt.*) [2] perhaps used as the name of a person.

39. *qan'orλ'is·oq | ila·'na | ernerta·raliun·a | uäwt·ut 'ït·'oŋuamik | saki'älλ·'ut·'uŋuamik |*

Would it would come to pass thus | partly at all events | would he (or she) would get a son | with something which is just like me | a little one with a poor breast |

40. *Pa·losi | mak,itaŋ'äs·ua | arnänuλ·o | mäk'itoŋ'äs·ua· | us'umin'uλ·o | aλ·ä't | nak'aŋajaj·je··a· ja· je·q*

Paulus | his big (membrum) erigatum | to the women | his big erigatum one | and towards his membrum | even | he stoops aja |

41. *o·m·än·armio·ŋuit | iχ·awiup toŋa·nut | pis'uλ·u'art'ar-t'oŋu'it | qam'a· a·ja· | iχ·awik alak·ara·ŋamiuk |*

The dear little inhabitants of *Oommannaq* | over toward the kitchen | the ones who are accustomed to walk with little rapid strides | from out there (outside the window) | when they catch sight of the kitchen |

42. *aŋutiŋuλ·e | ersinarqisoŋa | ut·o·ka | amet'orqam'in·i | amerqarput |*

But among men | I am one that people are afraid of (I look so terrible) | my ut·ut (vulvae) | they have the same old skin that has always been on them |

43.[1] *nuk'api'uλoŋa te·ŋalerama*

As young as I am | I begin to feel sexual desire |

[1] cf. n. 60 (*Iti*).

44. not used

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45[1]. *amarqa·ja·ija | takonarpɛ·uk | ata·ta·rpiŋ una | pis¡i·a | amarqa·ja amarqa··ja·*

'*Amarqa*[2] | do you not know it | it is your father's | it is your father's | his nith-song |

[1] cf. no. 89 (*Omnt.*), no. 97 (*Serm.*) [2] proper name meaning: a child which is carried (by its mother) on the back in a hood (*amaut*).

46. *tak¡orniari¡äŋoit | aχ·iŋuaqa·ᵂt | tak¡ornari¡arpise¡ | umiartorφiŋmut |*

The little new-sights-seeking ones | they are approaching slowly (far away) | are you coming to see something new? | to Umiartorfik

47. *a·rit ila mak·o | niwiarsi¡äλ·in¡ak·o· | ata·ᵂsertalera·ᵂ-k·it | samo·ŋa·ja·a·ja | niwiarsiaqarφioŋ·it·oq | samo·ŋa·ja···| ¡isual¡e ata·ᵂseq |*

Oh see! there we have them, these! | young maidens these | when I began to go underneath them | downward | something[1], which was no place, where there are maidens | downward | but the outermost end of it | is alike (for them all) |

[1] i. e. I found something (vulva).

48. *awiniarawit | ut¡ᵂerqiaq¡a·ᵂtit | si¡ornaŋ¡ut aja·· ja··ja·· j·a·· ja·ja··*

That time you wished to separate | you would like to have turned around again (come back again) | in the past |

49. *awoŋa | a·ᵂja··ja | ilomut | qajartoŋama | maka·a··je··a·· | upɛŋilänа | isorλersuarɔ·run·a | qajartoro·säλ·aŋ·ama | qaŋaŋɔ·q | ke··ke·· koŋuaja·je·ja··*

Northward | *aja aja* | surely | when I rowed in a kajak | ? | I do not believe (it) | he is said to be the very outermost one[1] | because I used to row so badly in a kajak[2] | once in the past, it is related | | |

[1] i. e. the foremost, the best one of them all [2] *qajartoro·sarpɔq.*

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50. *'o·maŋ,usak'ȧs·e* (or *-siup*) | *paj'utoŋ,usak'ȧs·e·* (or *-siup*) *s'arp'ɑn·'ik* | *pɛ·sä"n·ik* | *paj,oŋ'o.p''it* | *'ïλ·u,an'e* | *sarpisȧn·ik* | *pisä"n·ik* |

He the little wicked one | he who brings me a gift | the tail (*sarpik*) of a white whale | one which I am to own | your gift's | its other part | the future white whale's tail | the one which I shall own[1] |

[1] The meaning is: there he comes and gives me merely half of a *sarpik* instead of the whole!

e. Drum-songs from *Itiwλiarsuk* sung by *Benigne*, *Jellime*'s mother and *Tine*, *Pele*'s mother.

51.[1] *a··jɛŋa kat·aŋa··ja·*

[1] cf. no. 8 (*Iλ.*).

52. *aw'a·ja* | *s'ilan'uko* | *tak'usun'a* | *upatɛŋua* | *kina·ko tut·unik atɔrtoŋ·ɔ·q*

Fy!(?) | those outside there (in the open air) | how hideous it looks | his little thigh | ? | he who uses reindeer-skin, it is said[1] |

[1] who is clad in reindeer-skin.

53. *ama··a·je··a t'ɛŋu'aŋa tak'ɔrqil'ȧŋa a·ja··*

cf. no. 38 (*Up. N.*), no. 66 (*Qar.*), no. 80 (*Omnt.*).

54. *ilame* | *uŋata·ne* | *kɛŋora·rsɛŋajut·ɔq* | *uwaŋaŋ·uaq sap'ɛ·paλa··ja··j·a·*

Surely | on the other side of it | (there I can see) the one who is behind on all occasions | I the little one | I the very bold one |

[1] cf. no· 68 (*Qar.*). The meaning is: I cannot be seen where I stand; from my hiding-place, I can see him.

55. cf. no. 12 (*Iλ.*), no. 25 (*Iλ.*).

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56.[1] *akˈiwnaˑˑjaˑˑjaˑ*

He over there on the other side! (?)

[1] cf. no. 65 (*Qar.*), no. 93 (*Serm.*): *akˈiwnˈaˑ*, *akˈiwnˑaˑ*; The meaning is uncertain. "On the other side" probably refers to the opposing party.

57. *aºmˑajeˑˑjaˑ qanorinˑa ɪnalˈe iχtˑɔrnarɛmˑa ajoraŋaˑʷŋa*

cf. no. 92 (*Serm.*).

58. *tamˈanˑaˑnarne oqalutˑɔrsue ajaˑˑ iliɔrtorsue ɪnˑueˑ taˑmaˑˈ aŋuteˑ isumakerλutɪnˑakˑo oqaluλˑarnertoqaˑºq*

cf. no. 94.

59. *kˈusäsoˑp iniminik aniλˑaqaˑºq wiutiˑoˑ*

cf. no. 9 (*Iλ.*), no. 13 (*Iλ.*), no. 70 (*Omnt.*), no. 103 (*Arq.*).

60. *sorλo nukˈapiuλˑoŋa teˑŋalersoŋa*

cf. no. 43 (*Up. N.*).

61. *uˈersajuˈitˑɔq awaŋaŋuarλioŋa aŋutˈiʷnät tamarmik ˈikätˑˈaˑt.*

cf. no. 76 (*Omnt.*).

f. Drum-songs from *Qarajaq* sung by *Aχˑaɪte*, *Kali*'s mother (born 1829 in *Saˑitut*).

62. *aˑjɪŋa* (or *-ŋaˑ*) *katˑuŋa jaˑˑjeˑjaˑjaˑ aˑjɪŋa jaˑjeˑjaˑ jˑaˑˈjˑa*

Cf. no. 8 (*Iλ.*), no. 51 (*Iti.*).

63.[1] *ɪnˑaqa | qaɯkˑo | uluaqutʊˑt | aˑʷλˑarniaritse | asäŋuarniaritse | aˑkiŋˑa*[2] *| paˑŋˑuaq*[3] *| ersiλˑartaˑrpɔq*[5] *| akisutaˑŋuaq*[4] *| aˑkɪŋa*[2] *| nuiλˑataˑrpɔq*[5] *| aˑʷλˑarniaritse | asäŋuarniaritse | ɪˑsaŋaˑŋa | neŋisaŋaraˑra*

I wonder how they are | the ones down south | the ones with the thick cheeks | please travel away | please love one another a little | he over there on the other side[2] | the little P.[3] | he appears

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now and then | the little A.[4] | he over there on the other side | he appears now and then.

| Please depart | please love one another a little | I will swallow him | I will eat him |

[1] cf. no. 31 (*Iλ.*) [2] The word could be taken in the sense of: Answer me! but I think it is rather to be taken as a demonstrative pronoun formed of *'ake* (the opposite side after the analogy of *qawna*, *pawna*, *kiŋ·a* etc., or else the interjection *a* before *kiŋ·a* (he over there to the south) [3] Probably a nomen proprium, perhaps = *pa·quaq*, the buoy-holder which is stuck in under the cross-straps of the kajak so that it may be held fast [4] Probably a nomen proprium, meaning: the little answer, or perhaps: the little shining one. [5] combined with the suffix *-λ·ät·a·rpoq* (Kl. *-tdlagtârpoĸ*).

64. *kɛ·same isiáŋuara näλ·isiulerqa·ŋa*

Finally | my little drum-skin | I begin to get it in order (to use it) |

65. *ˌak'iwna·ja·ja*

cf. no. 56 (*Iti.*), no. 93 (*Serm.*).

66. *ama·ja ikɛŋuwaŋa* (or *itɛŋ·uara*) *takɔrqilaŋa*

cf. no. 38 (*Up. N.*), no. 53 (*Iti*), no. 80 (*Omnt.*).

67. *tuŋ'ut·e· am'a·ja tuŋ'ut·e··*

It tastes juicy(?).

68. *ilame oŋata·ne* etc.

cf. no. 54 (*Iti*).

g. Drum-songs from *Ommannätsiaq*

sung by *Regite*, Peter's wife, born in *Om·an·ätsiaq*, *Eli Kutät·oq*, born in *Säit·ut*, *Ribika Puäla*, born in *Uwkusis·ät.*

69. *i'a· min'a | 'ut·ᵊoŋ'up·oŋa*

| *aja* | I long for *utsuk* (vulva) |

70.[1] *kusäs·uaq iniminik an'iλ·ɛrqa·ᵊq uw'i.ut'i.uq'a· aja·· ρa··ja·ja·*

cf. no. 9 (*Iλ.*), no. 13 (*Iλ.*), no. 59 (*Iti.*), no. 103 (*Arq.*).

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71. *tawa·ᵗja·* [1] | *ᵗa·ρɪnᵗɪm·a* [2] | *tawa·ᵗja··*

| ? | there you can see! |

[1] *tawa·ja·rtoq* a dissolute person [2] *im·a* = *iwna*! yonder.

72. [1] *paw|aŋa·ᵗja·* | *qujaŋis·arɛŋujak·a* | *kiλ·e·λ·e* | *ila·ᵗsa* | *ᵗarqiaŋisᵗarmaŋa* [2] | *paw|aŋa·ᵗja·* | *aje··ja··ja·* | *paw|aŋa* | *pujoŋa* | *ɪm·a* | *ɪm·a* | *eᵛqalun·iλɛ·ma* [3] | *pujoŋa* | *kimukarpoŋa* | *paw|aŋa* *aj·e·ja· aᵗja··ρa·*

(Them) up there from the east | I am accustomed to thank them, the little ones | but the westernmost ones | some of them | they are not accustomed to have me for a friend | up there from the east | *aja* | up there from the east | I have come | yonder | from the salmon (river) | I have come | I go to the west (westward) | from the east up there | *aja* |

[1] cf. no. 96 (*Serm.*), where, however, the first part is wanting; it begins with: *pawaŋa pujuŋa.* [2] *a·rqiak*, a friend [3] no. 96 has exactly the same form, which seems to be antiquated (*-λɛ·ma*?).

73. *man·a* | *usuŋiλ·a·raᵗk·a* | *ɛʷŋ·ertunik* | *tusa·lera·ŋama* | *mana··* | *ja·j·a·ɛ·ja··* | *υ·aŋa* | *ajɔrpoŋa* | *iλa* | *taᵗniuarn·eq* | *uiluarn·eq* [1] | *uwaŋa* | *ajɔrpoŋa* | *a·ja··ρa··ja··ja··*

This one (him) | I envy him immensely | his song | as often as I begin to hear it | this one | *aja* | I | I can not (sing) | believe me! | the art of making poems | the art of upsetting | I | I cannot |

[1] < *uiloq*, a shell, *uiluarneq*, to be like a shell, a shell which easily upsets. The poem consists of ironical remarks about the opponent who can sing but who cannot even row in a kajak without upsetting.

74. *aja··ɛ·a··* | *malaŋas·uarsuk qumaŋas·uarsuk qernertuɪn·arsuaq* | *a·ja··je··a·ja·ja··*

cf. no. 10 (*Iλ.*).

75. *aje··ja··j·e··a··* *kan·a··ρa* *jaᵗj·a··*

aja | he down there | *aja*

76 [1]. *ia··j·a·* | *wᵗersajuᵗit·ɔq* | *a·j·a··* | *uersajuit·ɔq* | *ia··* | *uersajuit·ɔq* | *uersajuit·oŋ·uaq* | *uwaŋaŋ·uaq* | *uwaŋaŋ·uarλiuna* [3] *aŋutᵗɪn·unᵗa* [4] *tamarnik* | *ik·ataᵗt* [5] | *aja·j·aρ·a··ja··j·a··*

A woman who has never copulated with a man [2] | *aja* | a

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woman who etc. | *ia* | a woman who etc. | the little one who has never copulated | I the poor little one | truly I (am) the little one of bad repute | the little one of bad repute belonging to all men | their mistress | *aja·* .... |

[1] cf. no. 61 (*Iti.*) [2] or perhaps: who is barren, unfruitful. [3] no. 61: *awaŋaŋuarλioŋa* [4] no. 61: *aŋutiʷnät* [5] no. 61: *ikˑatˈaˑᶦ*

77. *pɛŋuaqàmˑa*[1] | *sarqusaˑrpaˑŋˑa kujätˑarpaˑŋˑa* | *tajäkˑa pärtarpaˑɪ*

My playmate | he is accustomed to take (or use) my *sarqut*[2] | he is accustomed to lie with me | my bracelets | he is accustomed to take them from me |

[1] *-qat* + *ma* = *qamˑa* [2] *saˑrqut*, especially those implements which lie in front of a man on top of the kajak, thence: anything which is in front of one.

78. *mäsˑale* | *suliäsˑakˑa ijaˑˑ* | *merque* | *iwkaˑlutˑut aˑjaˑ* | *pusäŋɪsaliλˑarukˑit* | *ɛmaˑqaλˑaˑᶦsoˑŋˑa*[1] | *aˑjaˑ* | *nuliarɛˑleroˑtɛŋa*[2] | *ɛneʳqunaralotuˈaqˈisˈɔq* | *ajaˑˑuaˑˑjˑaˑˑ*

Surely | I shall have great trouble | her hair | the sticking ones | when I begin in earnest to penetrate them | thus I shall eagerly say | *ajaˑ* | as soon as we get married | well, then it will easily be seen how delightful we have become |

[1] = *imaˑ oqaλˑaˑᶦsoˑŋa*? [2] *-leruwtiŋa* (for *-leruwta*?)

79.[1] *talerqaraλˑarawit* | *ɛmerqutaˑλˑätut* | *nioqaraλˑarawit* | *isɛŋˑuänˑile* | *quλˑerusiʷλˑoŋit* | *merqusiwitˑuλˑe* | *itᵉeqarˈaλˑarame* | *taˑɛmaˑɪɔrλe* | *qoŋujukˈäwsˑˈäsˑˈe*[2]

That time when you still had arms | just like a tern | that time when you still had legs | but his little eyes | having something to dry the tears off them with | but just like (i. e. as big as) a needle-case | when he had an anus | surely being thus | what fun!

[1] There is unfortunately but one copy of this song, which is probably very corrupt. It begins with the 2nd pers. sing.; then the speaker seems to forget this and passes over to the 3rd pers.

[2] this expression is used especially to a little child that is laughing; it means literally: a nasty smile.

80. *itŋˑuara aˑmaˑˑjˑeˑja takˈɔrqilarˈaˑˑ*

cf. no. 38 (*Up. N.*), no. 53 (*Iti.*), no. 66 (*Qar.*).

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81. *ɪnaqa·ᵘna | kujˈäλ·ara·ne | aja··sȧwna·ᵘja | qutȯ.suȧk·-ik·ut | nisiλ·oɳo | qalaseĕsuaᵘt·ɳut | kɪᵘλ·oɳun·a | isi.suȧt·ɳut*[2] *| tutiᵘλoɳon·a |*

Suppose one did that to her | when one lay by her[1] | *aja* her over there in the west *aja* | in her big collar-bone | hanging fast to it | in her big navel | biting it | the big point of her foot | stepping on it |

[1] or perhaps: how is it with her when he lies by her. Yet the other interpretation seems to be more probable, by which, according to Eskimo usage, the impersonal form (one) is understood as "I" [2] *ise* (or *ise·?*) has perhaps some other meaning.

82. *a·ja·ja· tikiλ·arnermit | timiˈa.kuluˈit | asukiarλɪ·ɳ·a | natarqualis·uaq | ɪɳ·a*

On account of storm and showers | the fulmors | let them say to me: do not know you! | he with the big nostrils | he over there! |

The meaning is perhaps: in spite of the snow-storm I recognize him (you) over there!

83. *ajˈät·ᵗiala·q ajät·ᵗiala·q | kunerqajarqaɳak·o | ɪɳ·ersua·ᵗna | ajätᵗiaq*

Ajätsiala·q | I was just on the point of kissing her | only sing loudly (?) | *Ajätsiaq* |

84. *amale | qineraluarujoɳa | qimȯς·imik | alupa·rtɔrsuarmik | ilä·ᵗɳɔ·q | tikiλ·arumarmata | ɪnum·iλ·e | qineraluarujoɳa |*

But again | I too should like to turn around to look at the sledge with the licking married couple[1] | various ones, it is said | because in a short time they will be at full speed; | surely, after people | I too should like to look around (after them) |

[1] *alupa·rput*, they lick each other, is (according to Kl.) a joking or derisive expression about a husband and wife who are continually together just as if they could not be separated — a habit which is not usual among Greenlandic married people.

85. *qamaɳa·ᵘja | ,ᵉɳ·ilerˈujoɳˈa | inun·ik aᵘλ·anik | takuniˈarλoɳa | ataᵀqamaɳ·a | ᵉɳ·ertɔrsuit | ɳala·kɪɳ·a | am·arqorλoɳo | qamaɳa··j·a·ᵘj·a··*

From in there | I also began to join in the song | other people | since I wished to see (them) | hear from in there | those who sing

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loudly | (through) the window | which I have open for myself (for my sight) | from in there | *aja* |

86. *awa·j·a kɪ·same* | *ila·ʻna* | *ɪχ·iäŋ·uara·ʷna* | *näλ·isiuleqa·ʷŋa* | *awa·jaρ·a·· ja·j·a·*

Finally | merely a part | my little throat | I begin in high degree to get something which suits | ava· ija |

The meaning is: finally I begin to hear them sing something which suits for my throat, so I can join in! — Perhaps this song belongs together with the previous one.

87. *ɪʷŋ·erniarn·eq* | *nukaŋänaqa·°q*

In singing | one (i. e. I) gets tired of it in a high degree |

88.[1] *kiχλorun·a* | *a·ʷλ·a·ʻseqaq·a· aja··* | *kiχλorun·a* | *serqorλa·ʻseqaq·a· a·j·a··* | *usɪ·ʷn·a* | *aŋoŋ·it·ɔq* | *aŋus·oŋ·a* |

One (i. e. I) envies him | (because) he has a rifle | one envies him | because he has a weapon which makes a report | but now I recall | before he had ever caught (anything) | I had caught (something) |

[1] Seems to be an old man's song from the transition time when firearms began to be used in the district (about 1820—30, cf. Atuagagdliutit 1899—1900 p. 98).

89. *amarqa·ja·j·a* | etc.

cf. no. 45 (*Up. N.*), no. 97 (*Serm.*)

90. *sakiät·a·ʷka*[1] | *asasäŋ·uak·a* | *aŋisɔrλoŋalo* | *erqa·ʻλ·oŋiλ·o* | *aŋisɔrλoŋalo* | *pajuλ·oŋiλ·o* |

My sisters-in-law | my dear little ones | (both) when I have got a big animal | I think of them | (and) when I have got a big animal | then I bring them (a part of it as) a gift |

[1] *sakiätsiaq*, brother-in-law or sister-in-law.

91.[1] *awa·ʻja ertɔrtɔrsɒ·λune*[2] | *nät·sersuaq* | *tɔqutäʷs·e* | *pituk·a·* | *niwλiarsorsɒ·ʷλ·une* | *täs·a·ʷna* | *toqutäʷse*

| That one (or he?) screamed loudly for help(?) | a hooded seal | the one which caught should be killed | the one which he had

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bound | to a little ice-mountain (he bound it) | screaming loudly | at the moment when | the caught animal was to be killed |

[1] cf. no. 32 (*Iλ.*) [2] = Kl. *êrtarpoq*?

h. Drum-songs from *Sermiarsuit* sung by *Agnete*, *Te's* wife (born 1833 there)

92.[1] *ama·ʲj·a·* | *qanorin·a* | *malʲe* | *iʒtɔrnarɛm·a* | *ajora·ᵒŋa ama·j·a·ja·*

| How (is) that one there! | Malé | are you ashamed of me | do you think I am evil-minded | |

[1] no. 57 (*Iti.*): *am·aje·ja· ajoraŋauna*

93. cf. no. 56 (*Iti.*), no. 65 (*Qar.*).

94.[1] *tamʲan·ä·ʲnerne*[1] | *oqalut·ɔrsuit* | *in·uɛ·t tä·ma·t* | *oqalułara·ŋ·amik* | *iliułara·ŋ·amik* | *atoŋ·it·oŋut* | *ma·ne* | *up·erqeŋaŋa·ᵘwut a·ja·j·a··*

Only here in this place | (are to be found) the big story-tellers | people all | because they are accustomed to talk eagerly with each other | because they behave eagerly | we who are of no use | (we) here | we are accustomed to have trustworthiness |

[1] cf. no. 58 (*Iti.*): *tamʲaŋ·a·narne*?

95. *ja·ja·jä·* | *kɛ·sa* | *mak·o kɛŋuta·säŋuak·a* | *nuŋusiwak·a ja·ja·ja·je·· ame··j·a·j·a··*

| Finally | these my little teeth(?)[1] | I have got rid of them (have lost them) |

[1] < *kigutaussaq*? (Kl.) a tooth on a saw or in a comb.

96. *pawaŋa pujoŋa* etc.

cf. no. 72 (*Omnt.*).

97. cf. no. 45 (*Up. N.*), no. 89 (*Omnt.*).

98. *alʲe·t* | *nuliäs·a* | *ap alɔm·ät* | *serφalɔm·ät* | *kɛ··kɛ··*[1] | *sulupa·p* | *uawitʲɔ·sʲars·ʲɔ·p* | *o·mas·uäk* | *kiλ·ilum·ät* | *nukʲapiʲät··a·p* |

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oqaka·ᵘŋa | piλ·uájuit·oŋa | unerλo | ajuit·oŋa | saperamɛŋa | ajoŋ·ik·aluarλoŋa | sapɛŋ·ik·aluarλoŋa | ikɛŋutiwnut | uniᵘk·arto-rasoŋáloŋa | aliák·a[3] *| puás·uáliáka*[4] *| tɛŋuliák·a*[5]

Alet('s) | his future wife | when she ran about (in play) | and when she threw wet mud about her | ?[1] | *Sulupaks*[2] | the big idiot's | his big heart | it was deeply wounded (by her) | he the new young man | he scolded me (saying:) | I am one who never will become happy | and says | that I am evil | since he had no power over me | although I am not otherwise incapable | although I am not otherwise powerless | to my friends | he has got the intention to tell something (bad) about me | ? | ? | ? |

[1] perhaps = interjection *kik·i·k*, which expresses disgust. [2] means literally: sea-perch (perca norvegica) [3] the last three words are difficult to understand. The suffix *-k·a* means: my (plur.) [4] < *puak*, lung [5] < *tiŋuk*, liver.

i. Songs from Rodebay (Jakobshavn District).

(Karl Olrik who communicated these songs (no. 99, 100 and 101) to me heard them in the middle of the last century up north in *Ata·*).

99. *Sʊ·λutiλ·e amerλormiut qaqajarλersarpat | sɛ·lɛa· | qaqajarλiλ·arpagase | ilisimanerqarpuse | atalɛ·a· | qaqajarλersʊt qaqajarλersʊt | naluŋiqaluarpá·se*

Why are the inhabitants of *Amerloq* in the habit of running them down? | *sɛ·lɛa·* (a name?) | Of a certainty you (plural) run them down(?) | you know all about it | now listen! | the down-runners (the abusers) | you know them.

100. *kaka·jäŋuarλo pa·kan·uk | kakajaj'äŋo·p siutiŋuak·ut kɛ·wa·ŋa | akiλ·uarλuqole | kɛ·wara*

When I and *Kakajäŋuaq* wrestled | *Kakajäŋuaq* bit me in my little ear. | But I paid him back in full | (and) I bit him.

101.[1] *awaniqɔ·q qila·ŋɔ·q kiᵛλiŋaniqɔ·q aŋiliusiŋuaq*(?) | *kia piwa·* | *ʊ·ma piwa·* |
sa·miusaqarma(?) *talerqiseqarme*(?)

ataliusa·q(?) *tiχa·p aλ·atv·p pan'ia*
na·kiap pania malerqip nulia
awɛ·nɛ·rv·luk

[1] cf. no. 2 with translation. K. O. did not understand the words followed by (?).

k. Songs from *Aulätsiwik* Fjord (68° 15′ N. lat.).

No. 102—104 written down in *Arqittoq* at the dictation of a woman *Mikisuluk*, born 1845 in *Aulätsiwik*; no. 195—107 modern songs communicated by her daughter who sang them for me in addition to several others in a similar modern style.

102. *inoaruλ·iŋaŋuin·ɔ·q· aulˑaliŋo·sarput*
The little dwarfs, it is related | they made little preparations for the

a·· pa·toŋasoarput qimap·arpv·t
departure | (recitative ah) our big out-stretched skin[1] we leave it

sv·p amea kusa·p amea
whose skin the wheat-ear's skin

[1] generally about a sealskin which is stretched out by being fastened between pegs stuck in the ground.

103.[1] *kinatɔ·q uiŋilara· qa·rtusup*[2]
Whom can I get to husband[1] | him with the lofty forehead | him with

merqortusup[2] *qarλɛ·ŋ·asoq uwaŋa*
the many hairs (the shaggy one) | him without trousers | me |

uiŋ'iŋa qartusoŋa
will you have me to husband? | I who myself have a lofty forehead |

merq'ortusoŋ'a qarλɛ·ŋas'orso|esoŋ'a
I who myself am having many hairs | I who myself am without trousers

ɛ·ᵂλ·ɛ·t w'ikunaŋilaŋ'ɛ·k qa·rtoŋawɛ·t
| you | I do not want you to husband[3] because you have so lofty a

merqortoŋawɛ·t qarλ'i·ŋas'or-
forehead | because you have so many hairs | because you are

so·ŋaw'ɾ·t *oqaqa·rsin·arλune* *oqaluλ·ar-*
completely without trousers | just as she said that at the same

sin·arλune *qa·u[k] qa·uk*
moment as she related that | (the bird's screech?)

[1] cf. no. 8 (*Iλ.*), no. 13 (*Iλ.*), no. 59 (*Iti.*), no. 70 (*Omnt.*) [2] or: who is it anyway that I have to husband! [3] genitive sing.

The meaning of this song becomes clear by comparing it with no. 8. It is a conversation between a wheat-ear and a snow-bird.

104. *tuluara* *suna·"na* *kim·iarpiuk*
my raven what is that that you have in your beak?

inu·p *qut·ora·* *so·rme* *tam'us'iŋiliŋa*
a human being's | his thigh | why do you not give me a piece of

ɾ·ŋak·o *taqaλ·iwkak·o*
it to chew (eat) | an old (discarded) pot[1] | when I (tasted?) it |

i"n·ap ata·ne *qa'jo·tâk* *qauk qauk*
at the foot of the slope a ladle (the raven's screech)

[1] or: the remains of beams in a wall?

This song seems to be a variant of the following song from Smith Sound:

A Raven flew by, above a person, carrying something in his beak. "What have you in your beak, Raven?" the person asked. "A man's thigh bone" the Raven answered "I eat it because I like it. I shall swallow it".

(A. L. Kroeber: Animal Tales of The Eskimo. Journ. Amer. Folk-Lore. Vol. XII, 1899).

105. cf. no. 1 (from *Oommannaq*)

106. *uwaŋa mak·ua usorisak·a unaqutiλ·it usorisak·a awiqaluarλutik utsertartut*

I envy those who have a sweetheart; I envy those who, even if they have separated from each other return again.

[I also took down a variant of this song at Jakobshavn; there the last word in the song was:]

katit·artut, those who are in the habit of uniting.

107. *ikatiŋeqa·ra piumasʊ·sarλoŋo ikatiŋeqa·ra siuλ·ermik qaq·at tunuane kiŋuλ·ermik umia ata·ne ikatiŋeqȧ·ra piumaso·sarλoŋo ikatiŋeqa·ra kusät·ala·p ina·ta kaŋiusȧŋuȧne kitiusȧŋuȧne ikȧtiŋeqa·ra*

I caressed her and trifled with her, letting on as if I wanted her (to wife), first behind the cliffs, last time under the umiak (the big skin-boat); I caressed her by the wheat-ear's nest, a little east of it — a little west of it.

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III. Children's Games and Rigmaroles.

No. 1—10 (with the exception of the variants) communicated to me by Thomas Magnussen, Jakobshavn, no. 11 by *Pe·le* Madsen, Rodebay, no. 12 by *Kattak* Reimer, ibid., no. 13 by Karl Olrik, ibid.

1. *arsarta! qa· arsaqis·a!*

Let us play ball! — Yes come, let us play ball! we choose sides — I toward the east — I toward the west (toward the south and the north) — there are too few of us — there are enough of you — then we must exert ourselves — we have won, we have taken their land, we have undressed them (*mat·arpawut*) — we have taken our land back, we have got into our clothes again — you must parry correctly, you must push with the shoulders, not overthrow with the hands — away with it (i. e. the ball), I follow you, I shall be on guard at the end of the field (*aqut·oq*), you are to lead the way!

2. *seqinius·a·rta! qa·!*

Let us play sun! yes, I shall be the sun — I shall be the sun — I shall be the moon — to the sun or to the moon?

3. *arpat·aqiarta! ja·jorte·rta! pät·ät·a!*

Let us run from goal to goal! let us clap! you must help me — run in — you run out — run well out of the way (like an animal that is shy) — *täs·a·ᵘsɾ·t milortis·ɒ·tit* you must be the one that throws the ball at them!

4. *nuwe·rta!*

Let us play *nueq* (a kind of arrow used to shoot birds with)!

shall be nuq·is·aq[1] (the wood that is used for such an arrow?)

ve· nuve· nuve·!

[1] This word generally signifies the cord or line on which something is especially: a short strap with a cross-peg on one end and a pointed bone on the other end to string the fish on that have been caught. p. 256).

ia·"tilse·rta qaja·"tilse·!

see who shall be kajak! (or who has perished in are the kajak (or: you have perished in the kajak)

ck!

·a·rta (occasional game?)

·hite-whale! — yes come, let us play with ·ta); you shall be my buoy! the kajak makes le, lifts the harpoon in order to throw it,

·r·juta (occasional game)

have a stump-bed (a house) — you shall be my son. Fetch some two are out hunting: my hus- he has caught a harp-seal, they drag it up for him! — Your uch. — Ah your son has has got the side-piece for the paw....

which the children round one of their iddle. This one backside; the middle, and shall be the

e is·it·a·ja·

Variant from *Oommanaq*:

No·ηυ·p awata·ne is·ita·ja pap·ata·ja
is·eqisa·q pap·aqisa·q
pinerniηuaq tiηujuma·rpa· pinarisersuarput

Variant from Rodebay:

is·ita·ja pap·ata·ja
tamawta is·eqis·a
tamawta pap·aqis·a (or *tamawta pulaqis·a*)

9. *it·eqan·isarta, it·eqan·isa·* etc.

10. *tυ·lianta·rta qa·!*

Let us play *tυ·lian* (i. e. decide who is to be it by counting out)

tυ·lian tυ·lian tυ·lianta·
wiηile· wiηile· wiηlista·
υ·kut·aλ·e mak·e· parnale·rpa·
pe·rputit pe·rit (go out of the circle!)
υ·mule· at·orma·ηa·
uφ·ale uφ·ale pup·υ·tit

Variant from *Oommanaq*:

tυ·lian tυ·lian tυ·lianto | φiηili φiηili φiηlista·ι | o·kotaλi maqapa·ηale·rpa·ηa | pe·rputit pe·rit | o·male at·ormaηa | uφ·ale uφ·ale pe·rit

Variant from Rodebay, see the following number.

The beginning of the rigmarole seems to be a Greenlandic rendering of the Danish counting-out rigmarole: "ullen dullen doff, fingel, fangel foff etc." The rigmarole is also said to be known in South Greenland; it seems to have passed completely over into the little Greenlanders' language.

11. *ersuλ·iηa·t·ut,* those who hide themselves.
tυ·lia·n tυ·lian tυ·lianta | φiηili φiηili φiηilista | o·ko·tàλe maki-pan·ale·rpa· | pe·rputit pe·rit.

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[My informant added the following:] when they have all been counted out of the circle with the exception of two, the one who counts out says to the other one: *a·pe iλ·it puŋit* (you are monkey, stoop!); he must stoop down so that he cannot see anything. Then all the others run away and hide. Thereupon he opens his eyes and begins to seek for them. If after some time has passed he still cannot find them, he must say: *ko·kojɔ·rλe.* As he listens, he will hear (as answer): *ko·kojoq* (or: *kokojuk*). When they act in this way, he will gradually find the others.

12. The fingers.

kuλ·oq υ·ma it^{s}erniarit qajartortut qimalerpa·tit
you thumb there, wake up! the kajak-rowers are about to leave you!

tikeq υ·ma it^{s}erniarit umiartortut qimalerpa·tit
forefinger there, wake up! the umiak-rowers are about to leave you!

qit^{s}erλeq υ·ma it^{s}erniarit qisut·artut qimalerpa·tit
middle-finger there, wake up! the wood-gatherers are about to leave you!

mikileraq υ·ma it^{s}erniarit nuniaqiät qimalerpa·tit
ring-finger there, wake up! the berry-gatherers are about to leave you!

eqerqoq υ·ma it^{s}erniarit pa·rnaqutitaraiät qimalerpa·tit
little-finger there, wake up! the crake-heather-gatherers are about to leave you!

13. Nursery-rhyme.

aλ·una·rsuaq kit·oraλ·armat nujaro·q atawoq
the big leather strap | when it burst | a hair, it is related, | it held;

atawoq taman·a
it holds (is hanging together) | this:

(quickly) *iluliaminiŋ·uaq* (pause; in lower voice:) *tinupaniŋ·ua*
a little tiny hummock — a little swelling[1]

(quickly) *iluliaminersuaq* (pause; in lower voice:) *tinupanersua*
a big hummock — a big swelling[1]

[1] a swelling either on the ground (knoll) or on the body.

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IV. A Letter written by a Greenlander.

(The original is appended in autotype.)

In the first line, I give the words of the letter in the writer's own orthography, under that, my phonetical transcription of the words, and under that again my translation. Since the original is not altogether easy to decipher, three processes of interpretation are necessary in order to get at the translation: the interpretation of the letters of the original, of the phonetical value of the letters*), and of the Greenlandic words. It is but natural that it must occasionally remain problematical if the writer's meaning is exactly reproduced in the translation.

Words of the original:	*asasara*	*takusimasaralu*	
Phonetical transcription:	*as|äsar|a*	*takusimasaralo*	
Translation:	my dear	and whom I formerly used to see	

ilesematuk	*alakatit*	*tegiwakka*	*kujaugalu*
ilisimatɔ·q	*aλ·ak·atit*	*tɛɳuwak·a*	*quja·^{w}ɳalo*
man of science	your letter	I have received it	and I thank (you)

Nuvabar 3	*alakatet tamasa*		*basivaka*	*imaka*
nuwampare pɛɳajuat	*aλ·ak·atit tama·^{i}sa*		*pa·siwak·a*	*ɛm·aqa*
the third of November[1])	all that you wrote		I understood it	perhaps

uvaga alakaka	*basisagenibatit*
u^{w}aɳa aλ·ak·ak·a	*pa·sisaɳ·ɛn·erpatit*
what I here have written	you will possibly not understand it

*) I give a phonetical transcription of the words of the letter, as I used to hear them pronounced anywhere in North Greenland and as the letter-writer himself probably would have pronounced them. Yet I dare not guarantee that he has no dialectal pecularities which have remained unknown to me.

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alakunama *takusunek*

aλ·aquŋām·a (?) *takusimasunik* (?) †

since you asked me to write about something (funny) to see (?)

uvaga *namikik* *sumi takusakagelanga* *kisejanimi*

uwaŋa *na·mik* *sumi*(*k*) *takusaqâŋ·ilaŋa* *kisi^{j}än·ime*

I nothing anywhere not anything at all have I seen but (other)

inuit *atasejugetut* *kevetunik takusut*

ɪnuit *ata·^{w}si^{j}oŋ·it·ut* *qiwit·unik takusut*

Greenlanders being not one (i. e. several) having seen *Qiwittoqs* [2])

tusatabaka *kisejane* *kusataresamilunet* *kilifamelunet*

tusartarpak·a *kisi^{j}än·e* *kus·atarisamiλ·ʊ·n·ɪ·t* *kiliφ·amiλ·ʊ·n·ɪ·t*

I often hear about them but either *Kussatariaqs* or *Kiliwfaqs*

amakumilunet *kukurijamelunet* *takusunek* *tusanek*

amarqumiλ·ʊ·n·ɪ·t *kʊ·kori^{j}amiλ·ʊ·n·ɪ·t* *takusimasunik* (?) † *tusarneq*

or *Amaroqs* or *Koukoriaqs* [3]) about them being seen I have

ajupuga *kesejani* *kalunat* *agalakigamik* *umejasuvamik*

ajorpuŋa *kisi^{j}än·e* *qâλ·una·t* *aŋalaqɪŋamik* *umi^{j}arsu^{w}armik*

never heard but the Europeans who wander far and wide on their ships

imaka *kugutataresamek*

ɪm·aqa *quŋus·utaris·amik*

perhaps (they have seen) *Quŋussutariaqs* (mermen and mermaids)

inusub †† *nalaganik* *takusukasemajonasebut* *uvaga*

inus·ʊ·p *nalɪŋanik* (?) *taku^{w}s·ukasimajon·arsip·ut* *uwaŋa*

of a big man's size they no doubt look confounded ugly. I

suli *inukutegesakalu* *tamata* *suvagelagut* *ileme* *kanuk* *inebet*

sule *inoqutɪŋisak·alo* *tama^{w}t·a* *sʊ·waŋilaŋut* *iλ·ime* *qanoq in·erpɪ·t*

still and my housemates we all we are well you how are you?

kemakategut *ikatutapategit* *uvatinut* *ajugeb*

qimak·a^{w}t·ɪŋut *erqartortarpa^{w}t·ɪŋit* *uwa^{w}t·in·ut* *ajuŋ·im* (?)

after you had left us we used to talk about you to us good (well)

† or **takusunik*? †† or *inasub* = *i^{w}n·as·ʊ·p*, a steep mountain's.

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alakegavet *kesesejane* *nalunakusaraluvatet*

aλ·arqɛŋawit *kisʲän·e* *näluna·ᵉrqusaraluʷatit*

because you have written again but what you otherwise asked for information about

---

buveuragek *nalulerakit*

puwioraŋik (?) *nalulerak·it*

because I have forgotten it I scarcely know it anymore

---

nalunagelaka *ikebalagemata*

nalunaŋ·ilak·a *ikip·aλ·aŋ·ɛm·ata*

I know about them [4]) that they have not been few

ɯaga kesema *benejalugaguvaka*

uwaŋa kisima *pinʲarλu(ŋ?)äŋ·uak·a* †

mine only the few (or small) ones which I have caught poorly

---

bujugelaka *atat 2* *natit 9*

puiuŋ·ilak·a *a·ta·t marλuk* *nätsit qula·ɬuät*

I have not forgotten them harp-seals two floe-rats (phoca foetida) 9

---

teseməbor (?) *29-nek* *tegugaluvaraket*

täsɛm·po (?) *29-nik* *tɛŋuŋaluʷarak·it*

here are 29 [5]) those I have caught, to speak of it [6])

---

asvtut *inuluvkuvakit* *ama* *nulijama*

aʕ·ut? *inʊ·λuarquʷak·it* *a·m·a* *nuliʲama*

eagerly (?) I bid you live well (greet you) also my wife

---

insijane *inuluvakuva*

in·isiane *inʊ·λ·uʷarquwa·*

her house-guest she greets him

Sakarijas inugsuktuk

sakariʲas inʊ·sut·oq

Sakarias Inûgsugtoq [5])

---

† or *piniaraluäŋuak·a*? †† or **asatut*, lovingly?

[illegible]
[illegible]
[illegible]

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Notes.

1) Is perhaps the date of the letter he is writing and is perhaps written first.

2) Ghosts. Means literally people who on account of shame or resentment have moved away from other people and live as recluses out in the mountains. The Greenlanders have a panic fear of them, about whom there are many tales.

3) Some of the many monsters of the folktales. There is probably some actuality at the bottom of most of these ideas, for instance reminiscences of animals which the Eskimo have known in their earlier home-lands. *amaroq* is still the word for wolf in America, but this animal is not found in the inhabited part of Greenland and is therefore never seen. *kiliwfaq* is the name given by the Point Barrow Eskimo to the mammoth which is now known only in fossil form. (Ray: Point Barrow Expedition p. 54.)

4) i. e. about the captured sea-animals.

5) The Eskimo arithmetic is at a very low stage of development. This may be a slip of the pen, but I consider it quite probable that Saka for the moment has got 29 out of 2 + 9.

6) i. e. if that is worth mentioning.

7) Christianized Greenlanders generally receive in baptism a Danish family name and a Danish (European) Christian name. There are only very few families in Greenland who like this one, bear a pure Greenlandic family-name. *inu·sut·oq* means the young one.

Sakarias was an old Eskimo and a practised seal-hunter who lived in the settlement *Arqittoq* on *Aulätsiwik* Fjord (south of Egedesminde). When I was in his house, there dwelt his four married sons and their children, besides his wife and a couple of female relatives. I stayed there for about 14 days. — I received the letter the year after my return from Greenland.

The orthography in the letter indicates that *Saka* no doubt remembers the value of the letters of the alphabet from the time when he went to school, but he employs them in his own way for his own original orthography, which is based on nothing else but his own pronunciation. He has either forgotten or perhaps never learned the artificial orthography used by the missionaries. That his knowledge of the letters of the alphabet goes a good many years back (about 50 years) may be seen from his use of *b* instead of *p* (*b* has long been out of use in Greenlandic orthography) and the absence of

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any distinction between *k* and *q* in his writing. What I especially want to call attention to is this:

1) He makes no distinction between *g* [*g*] and *ng* [*ŋ*], although he must have learned in school to use the letters *ng* for the latter sound: he writes *g* everywhere; in other words, as a North Greenlander, he makes no difference between those two sounds in his pronunciation, but pronounces [*ŋ*] where the South Greenlander would pronounce [*g*]. In a similar way, he writes *b* in *Niwabar* (November) for the corresponding nasal (*m*).

2) Just as he only has one symbol for *k* and *q*, he has only one symbol for *l* and *λ*, although in his pronunciation, he of course makes a distinction between the two sounds. His feeling that *λ* is a single sound is more correct than the *dl*, *tl*, *gdl* of Kleinschmidt's orthography.

3) Just as he uses *b* or *p* at random, there seems to be no rule for his use of the vowels *e* and *i*, *o* and *u*.

4) He indicates no modifications of the vowels, neither labialization (a^w, i^w, u^w), palatalization (a^i) nor uvularization. Especially the last of these omissions is of interest. He does not write *ar*, *er*, *or*, but merely *a*, *e*, *o*, (or *i*, *u*), and this is no doubt because he does not hear any *r* after the vowel in these cases, but correctly feels the sound *ar* etc. to be a whole.

5) He does not indicate the quantity of the sounds except once (*tegiwakka*, *kk* = [*k*·]).

6) The hiatuses *ea*, *io* are filled by a *j*, *ua*, *ue* by a *v*, which are glide-sounds testifying to his slow manner of pronouncing.

7) Only his own name is spelled according to the conventional orthography (*gs*, *kt*).

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V. Decoy-Sounds.

When the Greenlander is out fowling or seal-hunting, he often has a practise of enticing the game over toward him by imitating its natural sound (song, scream etc.) and thus calling it, as it were. For instance, I have often heard and seen a Greenlander calling from the strand to the young gulls out over the sea, swinging the wing of a gull in one hand while he holds his gun ready in the other. Each kind of bird is decoyed with its special sounds. The singing and piping of the small birds too, although they are not sought after as game, are imitated in a definite manner, perhaps especially by the children or for the children's sake.

These natural sounds which have thus been adopted in human speech from the language of animals furnish an interesting contribution to phonetics. Of course like other loan-words in the language, they undergo some change in adapting themselves to the Greenlander's customary basis of articulation: but the following specimens will show that in many or in most cases he has trespassed beyond the normal limits of this basis and has resorted to extravagant sounds in order to approximate as near as possible to the sounds of the birds and the seals. In comparison with us, the Eskimo is undoubtedly an authority when it comes to an exact imitation of the sounds made by the animals in his native-land. The following little collection of decoy-sounds I wrote down exactly as they were reproduced for me by *Ka·wartaq* a quick-witted Eskimo and the best sealer at the settlement of *Oommannätsiaq*. It was no easy task. I am sorry that my reproductions only can

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give a very vague notion of the real character of these strange sounds; it was difficult to analyze them, it was still more difficult to find satisfactory ways of expressing them. But still I think it will appear from my descriptions of the specimens that this "language" (anthropo-ornithological etc.), from a phonetical point of view, combines distinct peculiarities of the Eskimo language with foreign elements. Notice the constant use of uvular and even more "back" articulations. The Eskimo has heard the sounds of his own language in the sounds of the animals. Sometimes it has even occurred to me that perhaps, on the other side, his language may have been influenced in the course of time by the constant use of these decoy-sounds. Many hours of a roving Eskimo hunter's life are devoted to repeated practice in these extreme articulations. They are forcible sounds, intended as they are for the open spaces of free nature and for incessant repetition, as the animals use them.

The auk (*ap·aq*) has two screams: 1. [*haʀ°m haʀ°m*] ʀ = trilled point-r; *°m* weakly voiced. Falling musical accent on *aʀ*, about from A to F sharp. 2. [*qˡeqeqeqeqer qˡeqeqeqeqer*], with the point of the tongue resting between the upper and the lower teeth. Throughout the whole word, chromatic falling of the tone about from A to D.

The black-backed gull (*na·ʷja* or *na·ʷjaq*, plur. *na·ʷjät*).

The young gulls: [*dʀ·· dʀ··*] = strongly trilled uvular *r*. *d* is perhaps unvoiced, the rest of the word voiced, beginning about with the tone c, from there chromatically falling one tone.

The old she-gulls: [*qutᵗe·q qutᵗe·q*] F A G sharp.

The scream of the other gulls is reproduced as [*kʊtʊ··*], unvoiced throughout, namely [*kʊ*] whispered, [*ʊ··*] whistled in a

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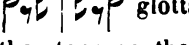
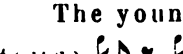
chromatically falling tone, of some gulls as [*qaj*ˈa^{q}] or [*qaj*ˈa·ˈ] with wide opening of the lips, and voiced.

The ptarmigan (*aqis·eq*).

The she-ptarmigan (*aqis·eq arnawiaq*), when she calls her young: [ʿ*i*·· | ʿ*i*··] with a singing or screeching falsetto voice, beginning with a glottal stop and then chromatically falling to the pause (here indicated with a stroke |). — Also short [ʿ*ẽ* ʿ*ẽ*] with nasalization.

The he-ptarmigan (*aqis·eq aŋutiwiaq*): [ʿ*a*··^{ä} | ʿ^{a}*a*··]  glottal friction throughout, beginning and ending with the stop; so the sound is neither whispered nor voiced (in the usual sense of the word), but is in reality a guttural sound produced in the larynx. The lips wide open, the point of the tongue at rest a little above the lower teeth. It is a sound which is otherwise quite foreign to the Greenlandic language.

The young ptarmigan (*aqis·ip piara·*): *t* (whistle) *t* (whistle) *t* (whistle)  i. e. 3 times a short, falling whistle (from A to G), which begins each time with the point of the tongue striking against the back side of the upper front teeth, and whose close each time seems to be accompanied by a glottal stop. The whole combination of course voiceless.

Kittiwake or three-toed gull (*ta·tᵉera·q*, plur. *ta·tᵉera·t*, larus tridactylus): [*takatᵉ*ˈe·*q takatᵉ*ˈe·*q qrq*] with a high falsetto voice.

The seal, especially the common seal (phoca foetida), is decoyed in several ways, of which the most characteristic can scarcely be reproduced by sound-symbols; it may perhaps approximately be given as [*q*aɔo·] or [*qρ*ɔo··], uvularized and voiceless throughout; first large, rounded lip-opening, which is gradually drawn together as if for a closed *o*; the tongue is strongly pressed together against the background of the mouth. The sound is produced by the violent expulsion of the breath,

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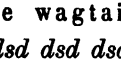
which creates resonance in the mouth in the same way as when one blows over the edge of a jar with a little opening or into a shell. This sound is considered especially difficult to imitate. — The same kind of seal may also be decoyed by the sound which is produced when the mouth is filled with air which is then expelled through the tightly closed lips. — A third decoy-sounds for seals is *k* (whistle) *k* (whistle) *k* (whistle) etc. (G sharp — F sharp), with rapid tempo; first a whispered *k*, then a short, falling whistle, both slurred.

In how far reindeer and sharks are decoyed by sounds I was unable to find out. — But *Ka·wartaq* gave me a number of sounds for such birds as are only seldom hunted, namely for

The raven (*tuluwaq*): [*qao qao*] (A — F sharp) with a trilled uvular *q*.

The wagtail (*kusák*, Kl. dict. *kugsaĸ* or *kugsagtaĸ*): [*hwʊit dsd dsd dsd dsd dsd*]  voiceless, the first part short and suddenly rising (from A to C), the last part chromatically falling.

The young wagtails: [*tʊl'e*] or [*t'uw'ɛ·· t'uwɛ··*] (A C A) in a falsetto voice.

? (*sujaq*, a little bird, partly white, partly black): [*pɛ··w'i*] (A — C) in a falsetto voice.

Sparrow (*narsarmiutaq*): [*matulɑquaq tɛ·tiʊp tɛ·tiʊp*].

In closing, just a few of the sounds which the North Greenlander uses (in addition to his whip) in driving the dogs harnessed to his sledge. They no doubt vary a good deal from place to place. Those I used myself I learned at Jakobshavn: a sign for the dogs to stop (by whistling), one for them to go faster: [*s·· s··*] or [*häph'äp*], one for them to go to the left: [*'iw 'iw*] with a high falsetto voice, and one for them to go to the right [*ilil'i ilil'i*], likewise with a high (rising) falsetto voice.

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VI. Eskimo Place-names from North Greenland.

The Eskimo place-names*) are merely common nouns that have been specially employed to designate certain places, and therefore it is generally easy to get at their meaning. Still very often the Greenlander does not get any general idea, or at least he does not think of any such idea when he uses the word in everyday life. *Qaq·aq* (mountain) designates for him a certain mountain, east or west of his hut; likewise *kouk* (river) is a certain river, *qeqertaq* (island), a certain island that has once been so called by one of his ancestors, despite the fact that there are many other mountains, rivers and islands round about in the neighborhood. "The big island" is the name that has been given to Disko Island and no doubt to several other islands too along the same coast.

So we have every reason to expect great monotony in these names and frequent recurrence of the same ones, and we only need to glance at a map of the Eskimo coasts where

*) Collections are to be found in: Giesecke's "Mineralogiske Rejse i Grönland", ed. by F. Johnstrup. Copenhagen 1878 (pp. 353 366: "De grönlandske Stednavnes Retskrivning og Etymologi" by H. Rink). — "Meddelelser om Grönland" Vol. III, 1894, pp. 995—1016 (List of Place-names in Conspectus Floræ Groenlandicæ with indications of latitude by N. Hartz). — "Meddelelser om Grönland", Vol. VIII, pp. 30—32, pp. 119 ff., pp. 268 ff, Vol. IX, pp. 341—350 (place-names in East Greenland). — Petermanns Mitteilungen Vol. 48, 1902 (Stein, place-names north of C. York). — Petermanns Mitteilungen Ergänzungsheft 80, 1885, pp. 90—95 (F. Boas: Baffin Land). — C. F. Hall: Narrative of the second Arctic expedition (etc.) 1864—69, ed. by Nourse. Washington 1879 (pp. 354—398).

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the place-names are given to find that the case is exactly as we expected. It seems as if the original settlers, who named the places, always believed that they had found their own familiar land again in the new districts where they came. Again and again we come across names like "the island", "the big island", "the little island", "the tolerably large island", "the mountain" "the big mountain", etc., "the point of land", "the big point of land", etc., "the river", "the bay", "the sound", "the inlet", "the corner", "the slope", "the sand", "the sunny side", "the shady side", etc. — all of them words current in the language, but which besides being used as common nouns have become specially stamped as names of certain localities in every district*).

They are characteristic on account of their lack of individuality. It seems as if they express the first impression made by the places, and they only testify to what the Eskimo has had practical use for designating; the name is given, so to speak, by nature itself.

Somewhat more special are names like "the one without a top" (i. e. a cliff with a bare top); "the fragrant one"; "ebb" and "flood" (i. e. places where the ebb and flood-tide are especially marked); "the current" (i. e. where it is especially strong); "the place where the wind blows with unusual violence", etc. Here we already notice more independent power of observation, yet still limited by the practical needs of everyday life. The same may be said about the place-names which owe their origin to the fact that certain animals frequent the locality: "the auks", "the gulls", "the black guillemots", "the ringed seals", "the full-grown he-eiderducks", etc., often with the addition of the suffix "the many". We also find words for animals that are of less importance as game such as "the snails", "the mussels", and others; likewise, though more

*) In the following collection of place-names from North Greenland, I have omitted many of these common names.

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seldom, plant-names: "the sea-weed", "the ferns", "sorrel", "rhododendron", "angelica", "the moss" (for the wick of the lamp), "grass", "the berries", and names of minerals: "iron", "clay", "potstone", "grindstone".

Of linguistic interest is the fact that all the ideas, the psychological results of each observation, are always comprised in one word in accordance with the whole structural tendency of the language, this one word (the name) thus often expressing several different ideas. This is the case in those names, of which we have already given examples, where there are special indications of quality combined with the chief idea, as for instance: big, middle-sized, little; many, bad, good, etc. These qualifying attributes are added by means of suffixes in so far as such suffixes are to be found in the language. If the language has no suffix with the desired signification, an independent word (generally a verbal participle) is used to express the quality, while the main idea itself is merely implied, for instance: "(the) blushing (one)" = the red mountain (land etc.); "(the one) growing black" = the black mountain (land etc.); "the uneven one" = the uneven island; "the flat one" = the flat island. The meaning of the suffixes, in terms of the grammatical-logical systems of our languages, may be either adjectival, nominal (for instance *-wik*, the place where; *-lik*, the person or the place that has or where there is), or pronominal (especially used possessively, for instance *ata-a*, its below-lying, *kaŋia*, its within-lying, in-an-inward-direction-toward-the-land-lying, where "its" (*-a*) refers to the most conspicuous or the most familiar part of the land). Among the adjectival suffixes, there are some which are obviously obsolete, occurring only in combination with certain words (names), and whose meaning is now uncertain. Such are the suffixes *-na·q*, *-ra·rsuk*, *-arsuk* and *-sus·uk*, which are all translated by curious, peculiar, strange, unusual, but which have probably formerly had more concrete meanings. *-arsuk* and *-ra·rsuk* are much used in Labrador in combination with

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personal names to form pet-forms: the dear little thing (Bourq. Gr. § 493); I have also found it in North Greenland in personal names (*Atara·rsuk, Unara·rsuk*). The suffixes *-λ·uk* and *-kaʷsaq* signify something like evil, abominable, damned, but the latter of these suffixes generally seems to have a humorous tinge; in combination with personal names, it half converts them to pet-forms. *-useq* is adverbial and means: approximately; *-neq* and *-λe·q* are superlative suffixes, the latter to be combined only with words expressing direction (locality), for instance *kaŋiλ·eq*, the one farthest over toward the interior of the land.

Of special importance in place-names is the suffix *-usaq*, "which resembles -", that is to say, the word to which it is added is not to be taken in the usual way, but is merely to indicate a resemblance, as for instance *iλ·erusaq*, the one that resembles a stump-bed, that is a ledge in the mountain-side (which looks like a stump-bed).

We now come to those names which do not simply refer to some peculiarity in the place but which owe their origin to the play of the imagination, as when mountains are called "shoulder-like", "kidney-like", "heart-like", "tongue-like", "udder-like", "excrement-like", "nose-like", "boot-like", "mouth-like", or when islands are called "sleeve-like", "floor-like", bays and inlets, "lake-like" etc. Very graphic is the name *pertuia·ʷsa*, "one that resembles a capsizing boat".

To a different class, again, belong the names where only the object that the place is compared to is expressed, the idea "-like" being implied, or rather left out. These metaphorical names only occur sporadically. We have them in the case of mountains that are called "the toupees", "the horns", "the comb", "the drill", "the blubber-bag", "the shade for the eyes", "the neck", "the stomach", "the liver", "the big hip", "the snub-nosed one", "the snout (of an animal), "the hair of the (seal's) whiskers", "the lips (of the reindeer)". Unusually graphic are "the one that draws his stomach in very much"

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(about a mountain that is bent inwards), "the one that weeps" (a wet mountain-side), "the one that carries a child on its back", "the one that has no jacket on", "the one that has taken off his fur-coat", *anore-na·laŋa* "the lord of the winds" (a very high mountain).

Of a different kind again are such curious, highly conscious appellations as *arqittoq* "the one that has no name" and *nʊ·ssu·ta·* "that which *Nʊ·ssuaq* has its name from", that is to say, the big point of land ("*nʊ·s·uaq*"), where no doubt formerly that settlement of the same name was situated which now lies some distance away and has taken with it, as it were, the name "big point of land".

A large number of the place-names have been suggested by details of human life, indeed they may even serve to give us information about characteristic features of Eskimo life, for instance: "the houses", "the inmates of the house", "the ones with the big sledges", "the bad way", "the spring- or summer-place" (i. e. the place where people camp in tents), "the place of ascent", "the place of descent", "the place where one got down at last", "the place where one carries one's boat over land", "the place where the big skin-boat or the kajak is drawn up on land", "the place where there is an outlook", "the place with good drinking-water", "the place with the tent-skins", "the place with the bridge", "the fox-trap", "the cooking-place", "the place where one does one's business", "the ball-game-place", "the place where one expects something" (namely game), "the place where one easily comes across reindeer", "the place where one is for the sake of shooting", "the place where the nets are put out", "the place where one hunts whales" etc. — Such occasions as the erection of a cairn, a pole, kindling of fire, drying of fish, gathering of lamp-moss, potstone, arrow-heads etc. may give rise to the name. Indeed there are place-names which are quite epic in character, like: "the place where there no longer stands an erect pole", "the place where iron

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has been taken", "the place where one flayed the skins off", "the place where one got enough to eat", "the place where one (or they) died of hunger", "the place where the pastor generally walks", "the place where the man beat his wife" (or vice-versa?), "the place where stones were thrown", "the place where the head generally has to be bent back" (that is in order to look up), "the place where on waits for the seals or the birds to become fat".

All these names have to be expressed by whole sentences in English; in Greenlandic there is only one word for each, whose elements express every detail of the ideas. — Of special linguistic interest are the examples of interjections used as names: *kaka·* (surprise), *ik·e* (shivering from cold), also the names made up of verbal indicatives: *nak·aleqa·q* "now it is falling" (i. e. a cliff) and *awartarpa·'t* "they broke the necks of them".

It must be added that there are of course many names which can no longer be explained, either because they have become corrupt in the course of time, or because they contain archaic elements.

The following place-names I took down at the different settlements as I visited them, without stopping to investigate their meaning at the time. In some cases it is only with hesitation that I presume to suggest my explanation. Rapid and careless pronunciation may have made the meaning uncertain. But I leave it to others to furnish better explanations.

I have not tried to make the list complete; on some stretches of the coast, however, and especially in the Umanak district there are not many omissions. But north of *Upernawik* and in the northern part of Disko Bay I have only given very few names.

The names are given in the order from north to south following the coast of West Greenland (North Greenland).

In the column to the left I use my phonetical orthography

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(η = ng, λ = tl, dl, φ = bilabial f, $a\cdot$ = long a ($\bar{a}$), $a\cdot\imath$ = $\bar{a}^j$ etc.). except that I here double consonants to indicate that they are long (thus *tt* instead of *t·* etc.). Every consonant that is preceded by *r* is as a rule long or half-long; this is indicated only in some few cases.

To the right I give some of the names in the usual orthography of the maps. — The largest Eskimo settlements are at those places which are designated as small trading-places ("Udsteder") or as colonies ("Kolonier"), the seat of the Danish managers, parsons and assistants. When only Eskimo settlement is given, it means that the place is inhabited only by Eskimo (a "Boplads").

Place-names.	Translations (Etymology).	Remarks.
Mernoq	? cf. Labr. *merngorpoq* is tired	northernmost Eskimo settlement in Danish Greenland (73° 50′) *)
Kʋ·k	the river	Eskimo settlem. (73° 45′)
Sarpaq	the current	Eskimo settlem. (73° 42′)
Nuta·rmiut	inhabitants of new land, or new inhabitants	Eskimo settlement north-west of *Sa·ttoq*
Ikerasa·rsuk	the peculiar sound or channel	
Sa·ıttoq	the thin (flat) island	Eskimo settlem. (73° 32′)
Täsiusaq	resembling a lake	the northernmost Danish trading-place (73° 21′)
Uwiŋasoq	sloping downward	Eskimo settlement
Erqorλeq	the hindmost inland	Eskimo settlement
Na·wja·tt	the young gulls	Eskimo settlement
Tussa·q	cf. Labr. *tupjat, tutjat* a trail, track (from *tume* a foot-print)	Eskimo settlement
Qa·ççersuaq	? the big *kagsse* (Kl. a meeting-house or a valley)	trading-place (73° 5′)

*) According to Ryder the two northernmost settlements in 1887 were *Saitoq* and *Itiwλiarsuk* (73° 31′). Meddelelser om Grönland vol. VIII. p. 232. — Many ruins of houses were found farther north, as for instance on 74° 19′ N. lat. (u. s. p. 254).

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Place-names.	Translations (Etymology).	Remarks.
A·ᵘpilättoq	the red one (the soil or the mountain)	trading-place (72° 56′)
Kiŋittoq	the towering mountain	Eskimo settlement
Qa·rsua	the big one which has no top (a flat-topped mountain)	a hill close to Upernivik
Upernawik	the summer-place (viz. where one camps in tents)	the northernmost Danish colony Upernivik (72°47′ N. 56°10′ W.)
Pamiuᵘa	its tail	promontory of an island
Karqat (*kappat*)	promontory jutting out from the inland	mountain
Nʋsuättᵉiaq	the middling large cape or peninsula	
Umiartorpik	place where people (i. e. travellers) use umiaks (boats rowed by women)	
Sullοq	a tube or a hole where there is a draught	
Qa·rsut	bare flat-topped cliffs	deserted Eskimo settlement
Qa·ᵉrsorsuaq	the big bare flat-topped cliff	
Appallit	the ones (islands or cliffs) with auks	
A·rqusaq	the one which resembles a sleeve	island
Ama·ᵒsiwik	the place where full-grown male eider ducks were caught	
Aʷpparsuit	the big auks	
Iŋŋia	its pointed top	
Tine [*tᵉin*ˡe]	ebb (low water)	
Ana·na·	his or her mother	
Kiŋittuarssuk	the strange towering one	a little high island
Niaqorna·rsuk	the strange head	
Siŋaĭn·aq	gray (like a gray dog)	
Sällεq	the foremost one	island

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Place-names.	Translations (Etymology).	Remarks.
Iperaq	the moss wick of a Greenlandic lamp	mountain with steep declivity
Mane·suarsuk	the remarkably uneven one	island
Mane·soq	the uneven one	
Kaŋeq	promontory jutting out from the inland	
Awaλλeq	the outermost one	island
Kaŋersuätsiaq	the middling large promontory	the small colony Prōven
Upernnawik kujäλλeq	the southernmost summer-place	South Upernivik, the southernmost trading-place in the Upernivik District; the above mentioned colony of the same name is here called:
Upern·awis·uaq	the great *Upernawik*	
Sioraq	sand (or grain of sand)	island
Qa·mmawik		island
Ujaratto·q	full of big stones	island
Mane·tsoq	uneven	island
Ana·"ssaq	?resembling excrement	island (Schade's islands)
Kiŋatak	mountain in whose ridge there is a cut (lit: in whose row of teeth there is a hole)	island
Innerit	the fires? or the flint-stones, cf. Petitot Vocab. *iknek* (C.) = *anmaq*, silex	fjord
Qerqertaq	island	
Nu·arsuk	the strange headland	
Umiarφik	place where the boat *umiak* is drawn up	fjord
Niaqornarsuk	the remarkable head (cliff)	
Kaŋa·rsuk	the strange point of land	point of land on which there is an inhabited house

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Place-names.	Translations (Etymology).	Remarks.
Täsiusaq	resembling a lake	
Qornoq	narrow part of a fjord or sound	
Neɣutusoq	wide (broad part of a sound)	
Siuteroq	snail	mountain
Amittoq	narrow	fjord where there are two inhabited houses
Serφat	the black guillemots	
Amittorssuaq	the big (very?) narrow one	
Miλλorφik	the place where stones are (or were) thrown	fjord
Qo·rυa	its valley	
Siχχuk	snout	Cape Swartenhuk (71° 40′ N. 55° 52′ W.)
Maliŋiaq	that which people must follow?	
Qa·rqoq	cooked and dried liver or seal-meat Labr. = dried entrails	
Narssaq	plain	
Inoquäsa·'t	the old witch-like persons? (cf. *arnarquas·a·q* the witch of the sea)	

The following is a general survey of the names of the most important places in and around the Umanak (*Oommannaq*) Fjord (71° N. Lat.), which we come to next on proceeding toward the south. Most of these names do not so much belong merely to single points (cliffs) as to whole expanses of shore or parts of the land, even if the origin of the name may indicate that a single more limited locality was the starting-point. I begin at the northernmost entrance to the fjord and proceed toward the inner end and then along the southern shore out to the southern entrance, including as I proceed the nearest islands.

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Place-names.	Translations (Etymology).	Remarks.
Qinniwik (or *qinnuwik*?)	place where one stores away winter provisions	Cape Cranstown (71° 22′ N. lat.)
Arφertoarssuk	where there always are whales	
Niaqornäkä"ssak	the hideous head (cliff)	
Illoηuaq	the little house	
Pa·"na·ηäsoq	rich in berries	
Täsiusaq	resembling a lake	
Eqe	corner (of the mouth), entrance (to the fjord)	
Illerusät	ledges which resemble the stump bedsteads in a Greenlandic house	
Tarto·"saq	resembling a kidney	
Eqo·"tät killet	the westernmost *eqo·ts* (a kind of seaweed)	
Akunnerit	the spaces between	
Eqo·"tät	a kind of seaweed (plural)	
Sawe·t	the iron implements, the knives	
Ulissät	tide waves at high water, or waves that beat heavily	
Mane·tsoqut	the land that is connected with the uneven place	
Kussättaq	sloping downward for a stream of water	
Ippik	cliff, steep clayey slope facing the sea	
Niaqornäka"ssak	the hideous head of the cliff	
Ulikki"wik	place where there is high water	
Umme·"wik	place where the boat is drawn up on land (during the reindeer hunt)	
Orpiηa·rsuit	the conspicuous bushes (or small trees)	
Arφersiorφik	the place where one hunts whales	
Ittako	the remains of the skins which have been sewed together	
Serφarssuit	the large (many?) black guillemots	

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Place-names.	Translations (Etymology).	Remarks.
Kaŋiusaq	resembling a promontory	bay
Iʷnnarssuaq	the high declivity (bluff)	
Ukkusissä pulea·rssuät	the *Uk·usisät* big reindeer-hunting district.	large fjord toward the north
Uʷkkusissät	potstone	
Qiŋua	the innermost part of the fjord	the inner end of the fjord (72°22′ N. lat., 53°41′ W. long.)
Pänertoq	dried meat or fish (or from *pan·eq*, a fullgrown male reindeer?)	
Niaqornakaʷssak	the hideous head (cliff)	
Iʷnnarssuaq	the big bluff	
Qo·rorsuaq	the large valley	
Iŋioq	surge, swell	
Säλλiaruseq	that which is relatively foremost	
Puerλasɛ·wik	the place where one waits for them (seals, birds etc.) to become fat	
Puerλasɛ·wɪsermia	the glacier at the place where one waits for them (seals, birds etc.) to become fat.	
Akuliarusiŋuaq	the little mountain which is relatively in the middle (i. e. it towers up between two fjords).	

To the south lies the island:

Place-names.	Translations (Etymology).	Remarks.
Qeqerttarssuaq	the large island	
Iŋŋiʷssua	its big summit	
Niaqornəkaʷssak	the hideous mountain head	
Ittakuarssuk	the conspicuous or beautiful *It·ako*? (v. p. 337)	
Na·ʻja·ʻt	the young gulls	
Akerte	?(the one that answers, i. e. echoes?)	

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Place-names.	Translations (Etymology).	Remarks.
Ko·ᵂna	?	
S,isara'ᶜᶜoq	?	
No·ŋa·ɪtsiaq	the middling big point of land	
Kaŋerλuk	an inlet, a fjord	fjord
Umiammakut	(these row-boats?)	
Kaρρat	their promontory	island
Nuliarφik	mating-place	
Puto	hole	
Mä·rqat	the children	
Qiŋusa·	?the front side of the innermost part of the fjord	island
Kaŋerλussuaq	the big fjord	fjord
Akuliarusiŋuaq	the little mountain towering up between two fjords	
Qiŋua	its (the fjord's) inner end	
Uiφφak	the fern	
Niaqornakawssak	the hideous mountain head	
Qoŋulertusoq	where there is much mountain sorrel and similar vegetation	Eskimo settlement (6 houses)
Sermeq awannerλeq	the northernmost glacier	glacier
Qiterλeq	the middle one	glacier
Pa·ᵒrniwik	the berry-place	
Qunnertusoq	where there is a big mountain-cleft	glacier
Qorλortoŋuaq	the little waterfall	
Kusaŋarsorssuaq	the enormous slope	
Kusaŋasoq	sloping, slope	tent-place and houses
Serminuaq	the little glacier	glacier
Uperniwik	the summer-place	
Uperniwe No·a	the promontory at the summer-place	Eskimo settlem. (71° 10′ N., 52°51′ W.)
Sioraq	sand (lit: the grain of sand)	tent-place
Ino·ŋuajuk	a little person (?)	coal-place

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Place-names.	Translations (Etymology).	Remarks.
Aŋiaq	a child born in concealment (?)	tent-place, building lots
Nu·a	its promontory	
Kusiniŋuaq	the little river-bed (which is dried out in summer)	
Kusinek annertuneq	the river-bed which continues running longest	
Ujarassuaq	the big stone	
Arφeq	the whale	
Serniŋuaq	the little glacier	
Tuperssuaq	the big tent	
Kaŋerλuso·p pa·	the mouth ("the hole for the sleeve") of the big fjord	the outlet of the sound between *Uperniwik* Island and the mainland
Niaqˡornˡaŋuaq	the little mountain head	
Qalättoq	that which boils? or the one that draws its stomach very far in?	high steep mountain
Iλλorssuit	the large houses	the island Ubekendt Eiland (Unknown Island) and the small trading-place *Iλλorssuit* on its eastern shore

From here to the north of the island Ubekendt Eiland:

Place-names.	Translations (Etymology).	Remarks.
No·ǥutak	the point of land	
Koruŋkaʷssa·t	the hideous clefts	
Nersiŋaso·ʷsaq	resembling a snub-nose	
Elimana	the place where one expects a good capture (of fish, seals etc.)	
Iλλunaq	resembling a house?	
Qa·rusuk	(lit: the one that is ready to burst) an underground hole	
Iλλoŋuaq	the little house	
Erqua·ta iwnna·	the bluff on the back side	
Erqua	its back side	

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Place-names.	Translations (Etymology).	Remarks.
No·ᵘtakisoq	= *no·q takiso·q* the long point of land?	
Qernertoq	the black one	
Norqaqortoq	the white point of land	
Qernertuaraq	the little black one	
Tikkäppaq	the kajak that has returned home?	
Ana·°saq	resembling excrement (the color)	
Erssaq	the one that shows teeth(?)	
Pertüⁱa·°sa	the one that is just as if about to capsize	
Orλunawia	its (or his) proper fall	little island
Sūjjua	its front part (prow)	island
Arqo	the stern	
Nuλλuk	the two rumps	
Issito·ᵘsak	< *isito·q* = ice-fog? one that is just like ice-fog?	
Ujara·ᵗt	the stones	
Ika·ŋut	a bridge, something that lies across	
Paperŋusik	the fish tail (*-sik*?)	
Uiφφak	a fern	
Sarqa·	its sunny side	
Tukkuik	the miser	
Tuluaq	the raven	
Qarnusaq	a short wall built in front of the entrance as a shelter from the wind (usually: *qaŋ·usaq*)	
Awartarpa·ᵗt	they broke the back parts of their heads (i. e. the fishes' or the men's heads)	
Tserqiaq	brim of a hat, shade for the eyes	
Narsiŋasoŋuaq	the little snub-nosed one	
No·ŋutaq	a point	

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Place-names.	Translations (Etymology).	Remarks.
Ilulio·maneq	a place that is slightly concave	
Teriänniaq	the fox	
Nuna·ŋuaq	the little land	
Iwnarssue	the big bluffs	
Naqerλoq	the hollow (in the mountain wall)	
Aopaluttuŋuaq	the little red one	
Kinumaneq	? = *tinumaneq*, that which is bent around	
No·ŋmiut	the dwellers on the promontory	formerly inhabited (ruins)
Naλiφφik	the place that is just opposite to one or that one is abreast of (nautical)	
Kusiniŋuaq	the little river-bed	(ruins)
Ko·roŋuaq	the little cleft	
Niorto·toka^{w}ssak	? = *niorto·tikaws·ak*, the hideous drill	
Niorto·suaq	the big drill	steep cliff
Iλλorsuit	the big houses	small trading-place
Inokassa$^{·t}$t	many people	formerly inhabited
Qe·oqe	? the one that is clipped, a kind of small gull	
Qa·ço·p iλλua	*Qa·soq's* house	building-lot
Iλλerussaka^{w}ssa·ɪt	the hideous things that look like beds	
Kap'ɛ̆	? the one that wears a double layer of clothes (Kl. *kappip·oq*)	
Kiŋ'arsim'a	that which has got a cut or nick in its edge	
A°paluttoka^{w}ssak	the hideous red one	
Sermeq qernertoq	the black glacier	
Akuliarusikawssak	the hideous mountain which towers up between two fjords	
Qa·rsuka^{w}ssak	the naughty cliff	
Isers'iutilik	? a place where the birds are driven inward	

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Place-names.	Translations (Etymology).	Remarks.
Kaŋerλuarsopsermia	the glacier of the pretty (?) or peculiar (?) fjord	the innermost part of the *Kaŋerλuarsuk* Fjord
Serme erqiŋa	the edge of the inland ice in the corner of the inner part of a fjord.	
Tiᵘssarissoq	the fragrant one	
Qeqertaⁱ akia	the coast opposite to the island	south of the little island in the fjord
Torŋit	the inland inhabitants	
Serma·runnikaᵘssak	the hideous place where the glacier has disappeared	
Ummiᶜᶫwik	place where the boat is drawn up on land (during the reindeer-hunt)	
Sermmikaᵘssaq	the naughty or hideous glacier	
Qiŋartarssuaq	the large mountain ridge	
Aserussuit	?the large crevices	
Appataᶜt	the auks (the moderately many auks?)	between the mouths of the two fjords *Kaŋerλuarsuk* and *Innerit*
Qaqortuätsiaq	the tolerably little white one	
Kaŋimusa·misoq	the one that faces toward the inland	
Tupersuᶫätta·ᶜt	the moderately large tents	
Qaŋatalikaᵘssak	the hideous one (place) with the rocky cavern	
Pukkitoaja·k	the low one — (*aja·k*?)	
Noŋotakaᵘssak	the hideous point of land (*-ŋota*?)	
Aᶜᵒλλaᵒniarφik	place where they are out hunting with shooting-weapons (cross-bows or fire arms)	
Sisortartokaᵘssak	the hideous one (cliff) that is apt to slide down	

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Place-names.	Translations (Etymology).	Remarks.
Ko·rorsuaq kaŋilλeq	the innermost (easternmost) large cleft	
Nunataŋuaq	the little land-island (in the inland ice)	
Kusinersuaq	the big river-bed	
Maλλak	?the one that has a gash or a loose flap (Kl. *magdlagpoq*): a hangnail	
Qeqertaŋuit	the little islands	
Oqa·°saka^{w}ssak	the hideous tongue-like one	
Täs'art'oq	?the place where the sea breaks in	
Qa·^{w}marujuk	the place where it is somewhat light	
Erφaλλika^{w}ssa·	?(*erφaq*, a coat of watertight skin) its (the fjord's) hideous one that wears a coat	
Qasiŋissät erniwigiät	the place of the sea-dogs (phoca vitulina), where they breed	
Serφa^{i} in'a·t	the nests of the black guillemots	
Qaqortoka^{w}ssak	the hideous white one	
A·°sorφik	?place which is becoming rotten or melting	
Akuliarusiusaka^{w}ssak	the hideous thing which resembles a mountain towering up between two fjords	
Kusi^{w}nika^{w}ssak	the hideous river bed	
Portuso·q	the high one	
Qeqertaka^{w}ssak	the hideous island	
Täsiusa pa·	the mouth of the lake-like one	the mouth of the *Täsiusaq*
Tserqiaq	a shade for the eyes	an overhanging cliff
No·ŋuaq	little tongue of land	
Akuliaruserssuaq	the big towering mountain between two fjords	Eskimo settlement (1 house) 71°3′ N. lat., 51°10′ W. long.

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Place-names.	Translations (Etymology).	Remarks.
Orssoviaŋuaq	the little mountain containing white felspar	
Qeppuka^{w}ssa·^{t}t	the hideous tracts of broken stone	
Na·^{o}jane	by the gulls	
Ko·rorsuaq	the large cleft	
Siorqane perser-sartoq	the one that drifts with sand	
Kissawiarssuit	the falcons	
Nu·suättsiaq	the moderately big point of land	
Innerit	the fires or flints (silices)	
Qa·rsors·uaq	the large, flat-topped cliff	
Kusinerssuaq	the big river-bed	
Sermeq awanner-λeq	the northernmost glacier	
Nunataq	land-island in the inland ice	
Sermeq	glacier	
Perλerφik	the place where people die (died) of starvation	
Ko·rorssuaq	the big cleft	
Nunarsusuaq	?the big (peculiar?) land	
Ajorsisimasoq	the one that could not get any farther, that had to give up	
Sermika^{w}s·ak	the hideous glacier	
Narsa·rsuŋuaq	the little peculiar plain	
Issi	?frost, cold — or from: *is·ip·oq*, bends down in a sitting position — or from: *is·in·erit*, the loose pieces of ice between the land and the main ice	
Puto	a hole	
Tserqiaq	a shade for the eyes	cliff
Eqalussualik	place where there are sharks	
Qunnertoq (or *-to·q*)	?the one that is cleft (a cleft)	

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Place-names.	Translations (Etymology).	Remarks.
Matta·°titoq (or *-to·q*)	?the one that has much *mat·ak* (whale-rind)	
Arqartarφik	place where one generally descends, or where the aquatic animals generally dive down	
Sa·ʻtoq	the flat one	
Ukusissät	potstone (plur.)	small trading-place (at the foot of a high steep mountain of this name) 71°2′ N. lat., 51°31′ W. long.
Alaŋerqa·q	the top of *Alaŋoq*, the shady side (of the fjord)	
Akuliaruseq	relatively the middle one	Eskimo settlement (1 house)
Qeqertät	the islands:	WSW. of *Ukusis·ät*
Qasiŋissät	sea-dogs (phoca vitulina)	
Qammik	?one that is filled with heaped measure	
Serφät	the black guillemots	
Sa·ʻtuarsuk	the peculiar flat one	
Kiŋittuarsuk	the peculiar towering one	Eskimo settlement (4 houses)
Iluerto·q	the one with the many pits (or ditches)	
Qernertoarssuit	the peculiar black ones	
Säλλeq	the leader (foremost one)	island somewhat farther south (high)
Appat	the auks	a rather large island south of *Ukusis·ät*
Uiφφaq	a fern	on the southern side of the island
Qa·so·p iλλua	*Qa·soq's* house	ruin
Itʻer·λak	a depression (mountain hollow or bay)	
Umiässussuk	?the curious row-boat	

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Place-names.	Translations (Etymology).	Remarks.
Naqerλorsuaq	the big hollow in the mountains between two fjords	
Nakkaleqa·q	now it is falling!	
Kusiṇika^{w}ssak	the hideous river bed	
Illu kujälleq	the southernmost house	
Sermiŋŋuaq	the little glacier	
Imerssuaq	the big (body of) water	
Ilueq	the grave	
Appa·^{t}lik	? the one that has auks	
Pania	his or her daughter	
Qaqortuät^{t}iaq	the tolerably little white one	
Innerit	the fires or flints	mountain
Qeporqaq	a species of big whale "with a low round dorsal fin and many furrows under the abdomen"	
Torsukatak	? *tors·o·q*, the entrance-hole of a house, house-passage	the sound between *Ap·at* Island and the mainland
Akuliarut^{t}ip qaqqa·	the mountain of the intervening space	at the entrance to the sound on the north side
Serφät ina·ι	the nests of the black guillemots	
Qarsortaŋuit	? the small arrows	
Qeppoŋŋuit	the little stones that have slid down	
Tulu^{w}aŋuit	the little ravens	
Siso·p kajuk	?	
Na·^{t}jä·^{t}tta·^{t}t	the moderately small gulls	
Kusinersuaq	the big river-bed	
Iliarssuit	? the big orphans	
Iliarsue qeqerta·^{t}t	the islands of *Iliarssuit*	
Naqerλorsuaq	the big hollow in the mountain-chain between two fjords	
I^{w}nnarssuaq	the big bluff	
Sa·^{t}tuarpala·^{t}t	the miserable little flat ones	

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Place-names.	Translations (Etymology).	Remarks.
A·°na·ᵗt	?	bay
A·na·ko·ᵐāt	*a·na·t*'s rivers	
Sa·rqutito·q	the one who has a big outfit of kajak-implements	
Eqiŋa	his or its corner (of the mouth)	a little pointed cove at the inner end of a bay
Qa·sop illua	*Qa·soq*'s house	ruin
Sermi nunata·	a land-island of the inl.-ice (a protruding mountain-top)	
Sermi kaŋillεq	the innermost (easternmost) glacier	
Amittuättiaq	the middling little narrow one	mountain
Anoreto·q	the one where it is very windy	high mountain
Itiʷllιarssuk	the peculiar crossing	Eskimo settlement by the fjord of the same name
Iʷnaŋuaq	the little bluff	
To·litalik	the one that has loons (colymbus glacialis)	Eskimo settlement (3 houses) on a flat island (70° 48′ N., 51° 20′ W.)
Perla·ᵗsarssuit	the large ones (pieces of wood) which can be used for sledge-runners	
Nυ·suätᵘiaq	the middling large point of land	
Ukalilik	the one that has hares	island
Qilluaq	the little carcass of a land-animal or bird	
Illutorqät	the old houses	
Qiŋŋoq	the inner part of a fjord or a hole	
Qeqerta·rqut	?	
Ko·rqut	the valleys	
Saᵗttut	the flat (thin) ones	small trading-place on a little island (70° 48′ N., 51°30′ W.)
Saᵗtuqisut	the ones that are very flat (or thin)	3 small islands a little farther north

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Place-names.	Translations (Etymology).	Remarks.
Uiorλe·t	the ones that are at the very end of the row (an increase in length)	
Aφφarλeq	a special room, a side room	
Naχχorφik	? place where things sprout; the place of vegetation	
Nāsiφφik	the place where there is an outlook	
Niarqusāt nāsiφ-φiāt	?	farthest east
Amma·ᵗt	silicated slate (plur.) i. e. argillaceous slate which has been hardened by silicious water, and which was formerly used for arrow-heads, knives etc.	farthest west
Aᵊnittuātᵗiaq	the middling narrow one	
Nu·suāttᵗiaq	the middling big promontory	
Akiᵊnaq	something that is just opposite	
Quŋasiŋua	its little neck	
A·ᵒpilāttoq	the red one	Eskimo settlement (2 houses)
A·ᵒpilātto· ta·	that which *A·ᵒpilāttoq* is named after	
Iʷnnakaʷssak	the hideous bluff	
Uiλλut	the shells	the southern entrance to the *Sermilik* Fjord
No·ŋa·ᵗtsiaq	the middling little promontory	
Sermerλt	the ones (mountains or fjords) that have a glacier?	
A·neq	the rotten one	mountain
Niaqornekassaq	the hideous head-like one	
Alaŋorssuaq	the big shady side	
Qa·ʷŋulik	the one with the edge of ice (along the shore)	
Merλertut	the children (obsolete word, now used only in elevated style)	

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Place-names.	Translations (Etymology).	Remarks.
Iti^{w}ssa·q	?the land (lowland) that one continually has to walk over	
Pɛŋɛŋaq	?	
Illerusaq	the ledge	
Akuliaruseq	the one that lies just about between	
Akullɛq	the middle one	rather small island
Sāllɛiarusāt	the relatively outermost or foremost ones	Storöen, rather large island with an Eskimo settlement (3 houses)
Akia	that side of it which is just opposite, the shore on the other side of the sound	
Pamiällua	its tail like that of an aquatic animal (seal or walrus)	
Aqajarua	its (interior) stomach	on the north side of Storöen (Great Isl.)
Pa·^{w}rnät	the berries	on the south side
Aŋuja·rtorɕik	?	
Qiŋarsuaq	the big bridge of the nose or the big sharp edge of the shin-bone	the northwest point (promontory) of the island
Qa·rsuka^{w}ssak	the hideous flat-topped cliff	on the mainland south-east of *Akuliaruseq*
Ilua	its interior	
Akuliarusersuaq	the big towering mountain between two fjords	
Alakarsa·ria	the one that allows him to become visible	
Qo·rorsuaq	the big cleft	
Naqerluk	a cleft in the mountain extending from valley to valley or from fjord to fjord	
No·^{u}erut	?	
Qa·rusuk	rocky cavern	at the promontory
Qa·'newe·'t	the places for the kajaks (where they are drawn up)	on the promontory

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Place-names.	Translations (Etymology).	Remarks.
Qarajaq or *Qaŋajaq*	a rounded bay between two steep cliffs	settlement (70°25′ N., 50°32′ W.)
A·ᵘpaluttuŋuaq	the little red one	
Noᵘkaʷssak	the hideous point of land	
Siççuaŋuit	the small mountain slides	
Kissawiaq	?a kind of bird (hawk?) (*kis·arviarsuk* = a falcon)	
Nunaŋŋuaq	little land	
Qaraja·wia	its real *qarajaq*, inner end of the fjord	low promontory in front of the glacier
Ko·ᵘkaʷssak	the hideous river	
Näserqawik	?there where the proper outlook is to be found	nearest to the glacier
No ŋatsiaq	?the middling large projecting point of land	
Nu·ŋutakaʷssaq	the hideous clumsy point of land (minor promontory)	
Iʷnnerit	the fires or flints	
Niaqornaq	resembling a head	
Nunataq	land-island in the inland ice	
Alaŋŋo·q	the shady side	the south side of the Umanak Fjord
Itipilua	? = Kl. *iserfiluk*, rima	
Puiättokaʷssak	? the hideous blister or bubble	
Qeqertaq	the island	
Qa·rssoq	the flat-topped cliff	
Itinneq	depression, the lowest pass between two bays or fjord	
Illerφiusaq	resembling a chest	deep, broad cañon, in which there is
Ko·ᵘsuaq	the big river	a large river on the way from
Majoriarsuättsiaq	the rather great ascent	a mountain in the interior of the land
Eqaluit	the salmon (plur.)	
Tiŋuk	the liver	
Narsa·soŋuaq	?the little plain	
Iʷnnarssuaq	the big bluff	
Nuφφiumaneq	?the one that advances most	

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Place-names.	Translations (Etymology).	Remarks.
Ilusissoq	? that which lies in the direction of the interior	
Sissokajuk	? the one that frequently slides down	
Ujara·ᵗt	its stones	
Qo·rorsuaq	the big cleft	
Sorqaq	a whalebone	
Sermɪnia	its (the inland's) ice	glacier
Sissiŋa	its fox-hole	
Narsiŋasoq	the snub-nosed one	
Malˡarᵗlarφik	place where the head is generally bent back	
Kaŋimusammisoq	the one that is turned in the direction of the inland	
Qa·rsoq	a broad-topped cliff	
Kusinerssuaq	the big river-bed	
Umiartorφik	place to which they used to go in row-boats (*umiaqs*)	deserted Eskimo settlement
Qanˡerpalˡuk	the one that resembles a mouth in appearance (or in sound)	
Sisˌoakˡaʷssˡaˑᵗt	the hideous (impassable) stones that have slid down	
Sermersuaq	the large glacier	
Iwiäŋarnät	resembling a woman's breasts (or the udders of a female animal)	
Iʷna·rsuŋuaq	the peculiar little bluff	
Umiusarsuaq	? the big one which resembles a curtain in a Greenlandic tent	
Itˢˡerλˡeq	the one that is deepest down in the valley or farthest in in the bay	deserted Eskimo settlement
Qeρρorsuit	the big avalanches of stone	
Imˌikiättoq	warm water	with a little river
Assakaŋŋuit	the little ones that roll around or roll down	
Sermmia	its (the inland's) ice (glacier)	

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Place-names.	Translations (Etymology).	Remarks.
Niaqornnäka^{w}ssaq	the hideous head-like one	
Assaka·rssuit	the big or strange ones that roll around or roll down	
Sermika^{w}sa·k	the hideous glacier	
Qarnersuaq	the big breaker	
I^{w}nnarsuŋuaq	the strange little bluff	
An$_{\|}$aχχ$_{\|}$uφil'iŋu'aq	the little place where one rests (supports) one's rifle (or field-glass)	
Tup'erssuaka^{w}ssa·'t	the hideous big tents	
Kʊ·tartoŋuaq	the little river which usually flows	
Ka·^{w}tartoq	1) the one that frequently hammers or beats? or 2) < *ka·wit·artoq*, the one that often whirls round	
Sänneriaq	something that lies or has turned across something else (especially the bow of a cross-bow). *san·erpoq*: turns or has turned crosswise (or < *san·erpa*: soils either with something dry or something moist)	
Qeppersuit	the big piles of stones (avalanches of stones)	
Sermiarsuit	the peculiar glaciers	Eskimo settlement (70° 35′ N. lat., 51°56′ W. long.)

Two islands east of this point:

Place-names.	Translations (Etymology).	Remarks.
Taleroq	a seal's or a whale's fore-paw	
Ikerasak	the sound	trading-place
Ik·e·	? 1) interjection on feeling a cold shiver, or 2) the hard wood in a kind of drift timber	Eskimo settlement (1 house) close by Ikerasak
Ika·rtalik	which has a bridge	Eskimo settlement

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Place-names.	Translations (Etymology).	Remarks.
Ikerasaŋuaq	the little sound (strait between two islands)	Eskimo settlement
O·ᵘm·an·ät·ˢiaq	the smaller *o·m·an·aq*	Eskimo settlement
Qaq·arsuät·ˢiaq	the right large mountain	
Näsiφ·ik	the outlook-place	
Inussuk	(resembling a human being) a cairn	
Näsiφφiççuaq	the big outlook-place	

North of *Serm·iars·uit* there lies out in the fjord:

Place-names.	Translations (Etymology).	Remarks.
O·mmannaq	resembling a heart	an island with a high mountain (1168 m.) and a colony of the same name, the Umanak of the map (70°40′ N. lat.)
Mane·λät	a piece of pack-ice	Eskimo settlement (1 house) close to Umanak
Qorλortoŋuaq	the little one that flows down (waterfall)	brook
Iλλerusarsuit	the big ledges	
Napparutarneq	?resembling the dorsal fin of a whale	
Näsiφφik	the outlook-place	
Puλänne	the pools of water that smell	
Ko·rorsuaq	the big cleft (valley)	
Arssarφiŋuaq	the little place where they play ball	
Palassarqisartarφia	the place where the preacher is accustomed to sit in the sun or: to walk to and fro (promenading)	
Noŋŋuaq	the little point of land	
Puλλammiut	the (fox-) trap-inhabitants	deserted Eskimo settlement
Puλλätiŋuaq	the little trap	

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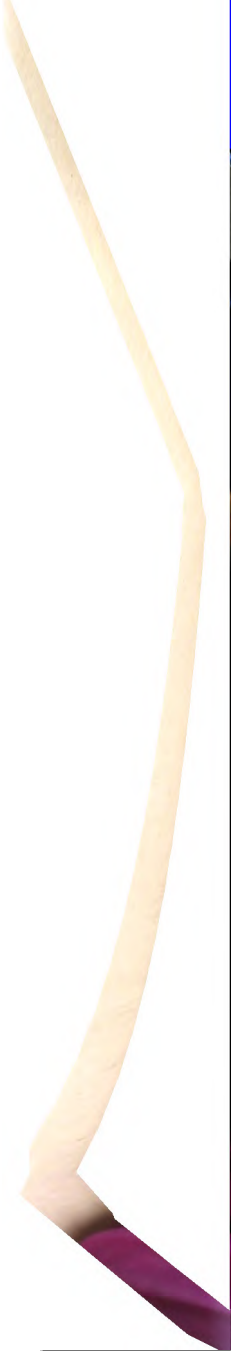

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Place-names.	Translations (Etymology).	Remarks.
Iʷnakaʷssak	the hideous bluff	
Kussaŋasuŋuaq	the little one that slopes downward	
Sarφarφik	the current-place, rapids	
Ilnʷerquˈissˌusˈoq	? the one who misses a place of deposit	
Qa·rsuarsuk	the peculiar flat-topped cliff	
Pattorφik or *Aŋiarssuit*	place where husband and wife fight (or where the husband beats his wife)	
Iλλokaʷsak	the hideous house	an unhabited house
Imerissoq	place with good water	
Qa·rsut	the bare flat-topped cliffs	small trading-place
Qilertiŋuit	the little toupees (the women's mode of dressing the hair)	mountain 2025 m. high (70°38′ N. lat., 52° 28′ W. long.)
Aŋiarsuit	the big (many?) grindstones or files	mountain (Slibestensfjældet)
Ekorφät	the underlayers, a tongue of land at the foot of a high mountain	
Serφät	the black guillemots	
Anore na·laŋa·	the master of the wind	
Kiŋittoq	the towering one	
Aʷqquλλoŋiaq	? the one where there is bad walking	
Niarqornät	the head-like ones	small trading-place
Oˈjo [ˌʊ·ˈjˈo]	? the eeking (Kl. *uigo* = *uio*, an addition to the length; eeking) cf. p. 360	
Sālisaq	the one with the hair scraped off (especially about scraped hides)	
Nʊila·ᵘsaq	resembl. the upper opening in an Eskimo cloak (*anoraq*)	
Nunarsuättᵘiaq	the middling large land	big isolated cliff
Ama·rtorsuaq	the big *ama·rtoq* (one who carries a child on her back in the hood of her cloak	conspicuous, round topped cliff

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Place-names.	Translations (Etymology).	Remarks.
Tuwiussa·	resembling a shoulder	
Nʊ·tulλeq	the next point of land	
Nʊ·k qiterλeq	the middle point of land	
Tuluāŋuit	the small ravens	
Kɪ·narisoq	the one with the pretty face	
Nʊ·suättˢiaq	the middling large point of land	
Kusiniŋuaq	the little dried up river-bed	
Eqe	the corner (c. of the mouth)	
Itiʷλe	the place where one carries the boats over	(map:) Iterdlak
Tupersuarta·	? that from which the big tent has got its name	
Iʷnnarsuātsiaq	the tolerably big bluff	
Sammisoq	the one that is turned this way (in our direction)	
Kʊ·k	the river	
Quta·rλuk	a forbidding steep place	
Nʊ·loq	point of land (*-loq* = *-luk*?)	
Qernertuarsue	the big entirely black ones	
Ipikaʷsät	the horrid clayey banks or moraines	
Kanissut	the sea scorpions	
Kaniuaqqät	the little sea scorpions	
Qupittaq	a cleft	
Sammisuaraq	the little one that turns this way	
Itatalik	? (a place) with tent-skins, which are associated with the place	
Naqerλoq	the hollow, the depression	
Sa·rλoq	? a thinner place	
Ko·ruta·ɪ	the valley's surroundings	
Kaŋeq	the promontory	Hukken (70°44′N.lat., 54°28′W.long.)
Pulλäsuaq	the big trap (fox-trap?)	
Amittuarsuk	the narrow one	
Nʊ·suaq	the big point of land	small trading-place (map: Nugsuak)

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Place-names.	Translations (Etymology).	Remarks
Ike·ʿaq or *Ite·ʿaq, Ite·ʿa*	one that (or he that) departed for the bay (*ikeq*)	the inhabited part at the trading-place
Nʊ·sʊ· ta·	that which has given *Nʊ·suaq* its name	Eskimo settlement just south of Nugsuak
Nʊ·maq or *No·ʷmaq*	? the real (proper) point of land	
Nāλλuarsuk	the peculiar ford	
Nāλλuarsuaraq	the little peculiar ford	
Nāλλuarsuɕɕuaq	the peculiar big ford	
Kuɕiniɳuaq	the little dried up river-bed point of land	
Nʊ·luk	the ugly point of land	

Disko-Bay. Here I give merely a few names although the place-names are in reality just as numerous here as elsewhere along the inhabited coasts. The bay itself has no special name, but is merely called "the sea". The sea outside is spoken of as "the real big sea". **Disko Island** is named *Qeqertarssuaq* (the big island); **Arveprinsens Eiland** is called *Aλλuittoq* or *Appât* (the auks) after the colony of the same name which is situated on its west coast.

Place-names.	Translations (Etymology).	Remarks.
Qeqertaq	the island	small trading-place (69°58′ N. lat., 51° 14′ W. long.)
Talerʊa	its fore-paw (the seal's)	
Kaniorssuit	the big sea-scorpions	
Pisissarɋik	? place where one is accustomed to leap, jump (or shoot with the bow and arrow)	
Ana·	his excrements (or: her elder brother)	Eskimo settlement
Ulussät	? 1) the cheeks (plur. of uluak) 2) a kind of stone which can be used for *ulo* (1) a woman's knife 2) harpoon-point)	
Kussaɳasoq	the one that slopes down	

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Place-names.	Translations (Etymology).	Remarks.
Arsiwik	place where there is an abundance of provisions	Eskimo settlement
Ata·	that which is below, the foot (of the slope)	small trading-place (69°43′ N. lat.)
Pa·kittoq	something with a small opening, here: a fjord with a narrow mouth	small trading-place
Qit'ermmiut	the ones that live in the middle	
Ana·juit	? the ones that need to do their business	
Sis·arisoq	the pretty beach	
Iluarqu·t	the stone pits (to keep blubber in)	
Nu·kutak	a clumsy point (of sand)	
Sa·tukojoq	the flat (land) (*kujo·q*?)	
Siororssuit	? the large sands (sandy beach)	
Aqajarua	its (his) stomach	
Sarφaq	current	
Innaq	the bluff	
Qunnerssuaq	the big fissure	
Ana·rsuit	the big (many) excrements	
Iφφit	grass	
Pikiulik	the one that has a fountain-head (?)	island
Anoreto·q	the one rich in wind	
Kaŋa·rsuk	the strange promontory	
Itussa·q	? continual walking over land or over a mountain ridge	
Pamiua	its tail	
T'unnerit	? the ones that have fallen down	
Oqa·'ttoq	the cormorant	small trading-place (Rodebay 69°20′ N. lat.)
Qa·rssua	its flat-topped cliff	
Nāsiφφiŋuaq	the little outlook-place	
Iwiaŋarnāt	the one resembling udders	high mountain

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Place-names.	Translations (Etymology).	Remarks.
Persera·ɯtoq	the one that continually (on all occasions) drifts	high mountain
Qa^{w}ssuserφik	the place where nets are put out	
Nuerλuk	one that rises a little above its surroundings (a low island?)	
Oqa·ttuɳuit	the little (few) cormorants	
Kiättʊ·t	the very warm (springs?)	
Paɳalittoq	the one that has four legs, a four-footed animal or insect	
Ipiʊ·taq	that which resembles a handle; the neck of land between a rather broad peninsula and the mainland	
Sawe·rneq	place where iron has been taken	
Kuännerit	angelicae archangelicae	
Qarajaq	a rounded bay right closely surrounded by cliffs	
Täsera·ssaq	resembling a lake	
Qasiɳiartʊ·t	those (places) where there are many sea-dogs (phoca vitulina)	
O·ʻjʊ·k [*ʊ·ʻjʊ·k*]	?the two *ʊ·ʻjuk*? Gr. *uio* eeking; Gr. *ʊ·s·ut* boiled capelans (Labr. *ōjok* boiled meat or fish)	
O·ʻju killeq	the westernmost *o·juk*	
Nʊ·luk	the evil point of land	
Qasiɳiarçuit	the big (many) sea-dogs	
Qasiɳiätta·t	the moderately many sea-dogs	
Tiɳuajuk	?(*tiɳuk* liver)	
Itisuarsuk	the peculiar deep (place)	
Qaqulluit	the mallemokes (kind of big gulls)	
Alaɳɳua	its shady side	

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Place-names.	Translations (Etymology).	Remarks.
Inussuŋa·tta·t	the ones that almost resemble cairns	
Akinna·q	the one that is just opposite	
Qiŋuŋŋua	the little inner end of the fjord (that resembles a cave)	
Qamutilissuit	the ones with the big (or many) sledges	
Patta·ᵘφik	the ball-game-place	
Ilulissät	the icebergs	the colony Jakobshavn (69°13′N.lat.)
Pitorqaq	the wind-cañon, place where sudden gusts of wind arise	Eskimo settlement
Illumiut	the house-dwellers	Eskimo settlement
Allutuarsuk	? the peculiar one that has a poor support or underlayer (the foot of the cliff)	
Sa·rluk	= *sa·rloq* (?), a thinner place	
Tᵉerqiaq	a shade for the eyes	
Nuχχiumaneq	the one that advances most forward	
Kiŋittoq	that which towers up	Eskimo settlement
Sermermiut	the inland-ice (glacier) inhabitants	deserted Eskimo settlement
Nu·a	its point of land	here begins the big ice-fjord south of Jakobshavn
Pernneq	a joining	
Allorarφik	? place where one steps (as from stone to stone) or a place where they (the birds) dive down	
Amerssiwik	place where one stripped the skin off	
Pitorqeq kaŋilleq	the innermost (easternmost) path of the wind	
Killeq	the outermost (westernmost) one	
Tuluaŋuit	the little ravens	

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Place-names.	Translations (Etymology).	Remarks.
Qa·'ja	? his kajak	
Qeqertaŋuaq	the little island	
Kuniätta·q	?	
Ko·rorssuaq	the big cleft	
Qilakittoq or *Qilaqittoq* (?)	? that which has a little sky (i. e. a little peak)	mountain
Ko·ŋuarssuk	the little river (place)	
Kissawiarssuit	the falcons	high mountain
Qaqarsuät'iaq	the middling high mountain	smaller mountain behind the preceding one
Immilik	that which has water	
Qo·rqut	the groves, the valleys	
A·λλa·'niarφik	place where one is for the purpose of shooting	
Näλλuarssuk	the peculiar ford	
Sarφaŋuaq	the little (weak) current	
Qiasoq	the one that weeps	bluff
Quŋulerssuit	the big (much) mountain sorrel (or a similar plant)	promontory
Serqua·rtoq	the one that cracks (or crashes, bangs) a little bit	promontory
A·paluttoq	the red one	bluff
Ko·ŋuaq	the little river (brook)	
Niaqornnak	cliff resembling a head	promontory
Ippik	steep clayey bank, moraine	promontory
Qa·rinnerit	? the ones with the prettiest (smoothest) surface	bluff
Nυ·luk	the (hideous?) promontory	promontory
Na·jata·'t	the moderately many gulls	bluff
Amittuarsuk	the peculiar narrow one	(fjord?)
Naqittoq	that which is low, pressed down	promontory
Upernawik	the spring- or summer-place	promontory
Sarφarssuk	current	cove, inlet
Piŋ'omiut	the inhabitants of the heaps of gull-excrement	projecting bluff nearest to the inland glacier on the north side
Tiw'ssarisoq	that which is fragrant	cove farthest in on the south side

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Place-names.	Translations (Etymology).	Remarks.
Qaja·	its (his) kajak	promontory
A·ᵘλλa·ᵘniarφik	place where one is for the purpose of shooting	promontory
Alaɳo·ɳua	the little shady side	cove
Qiloɳaneq	? that which is (most) shrunk	
Paλλoɳajoriaq	the one that lies on its side or with its face downward (*-joriaq*)	
Täserarsuaq	the big pond (pool)	lake
Pitorqeq	place where sudden gusts of wind arise, draughts of wind	
Qeρρorsuit	the big piles of stones, taluses	cove
Säλλiaruseq	relatively the foremost one	promontory
Innarsuaq	the big bluff, steep mountain-slope	promontory
Innaʳqisoq	a place which has a very steep bluff	promontory
Itiλλerssuaq	the big land-passage	cove
Nuφφiumaneq	that which projects most forward (or up)	promontory
Säλλia·kasik	the bad *Säλλia* (that which lies in front)	promontory
Makisarsuaq	the big *makisaq* (= *makiseq*? loin, hip?)	promontory
Nunarsuätᵗiaraq	the little middling large land	promontory
Nunarsuatᵗiaq	the middling large land	promontory
Pitorqeq	draught of wind, where the wind blows hard	steep mountain
Arqartarφik	the usual place of descent	promontory
Oqaussaq	rhododendron	
Tika·ɳuλλik	1) one that has a handle like that of a harpoon 2) the smallest species of whale-bone whale (whose dorsal fin resembles such a handle)	cove
A·ᵘpaλutuarssuk	the peculiar red one	cove
Itisuarssuk	the peculiar deep one	cove

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Place-names.	Translations (Etymology).	Remarks.
Pullâtiŋuaq	the little trap	promontory
Ammokaja·riaq	the place where one goes right down	promontory
Arqarajaq	place where one has come down (the last place in the descent)	cove
Majoralāt^{s}iwik	the place where there is easy ascent (or where fishes often come up?)	
Uwaŋuit	? (the small *uva* or *ua* (plur.)?)	
Ikkarλualu^{w}it	the many rocks (nautical)	cove, bay
Ikkatuaja·q	place which is always shallow	promontory
Nuŋarsukata·q	? that is tired of *Nuŋarsuk*	promontory
Sissarisoq	strand where it is passable	cove
Sarfarnertoq	the current-channel	promontory
Sawitarφik	? place with the usual current (where everything floating drifts away with the current)	promontory at the southern point of the entrance to the fjord
Eqe	the corner of the mouth, the corner	Eskimo settlement promontory
Anora·'t^{s}oq	the one that is without a hooded cloak (or without clothes)	
Mattatornaq	one that resembles a person who has taken his fur-cloak off	
Arquλλuk	the bad road	
Nusuāt^{s}iaq	the middling large point of land	
Iŋeqortuarssuk	the one with the peculiar point	
Qa·rsoq	the bare flat-topped cliff	
Akuniŋuaq	the little space between	cove
Iλλumiut or *Awannarλi·t*	the house-dwellers the northernmost ones	Eskimo settlement 69° 8′ N. lat.)
Ippik	a high steep clayey slope facing the sea	clayey plain, moraine

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Place-names.	Translations (Etymology).	Remarks.
Illoɳuaq	the little house	
Kaka·	interjection expressing great surprise etc.	very steep slope
Inussuk	resembling a person, i. e. a cairn	promontary
Perqerqa·q	the thing whose ends are very much bent together	
Ilimanak	the place where something may be expected (in the way of a capture of fish or seals)	trading-place Clavshavn (69°4′ N.lat.)
Napparuta·runeq	the place where there no longer is any *nap·aruta·*, mast, upright pole (where there formerly was one)	
Tuapaɳuit	the small (or few) pebbles (washed up on the shore)	
Tuapassuit	the many pebbles	
Nunataɳuaq	the little *nunataq* (land-island which projects above the ice).	promontory
Po·ruseq	the blubber-bag	
Arpik	? 1) Kl. Dict.: that which is troublesome, 2) = Labr. *akbik*, arctic blackberry (rubus Chamamorus)	
Piɳuarsuk	the peculiar gull-knoll (flat-topped mountain which resembles a heap of gulls' excrements)	high mountain
Akuliaruseq	a mountain-ridge between two bays, which resembles a nose	
Qalile·runeq	? place which has been deprived of its cover or its top	island
Na^{4}nilik	? which has the shortest one	
Amalo·siwik	? the place with a rounding	
Illorsuātta·t	the middling large houses	

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Place-names.	Translations (Etymology).	Remarks.
Kiāsia	its shoulder-blade	promontory
Oqa·t^{u}uarssuit	the peculiar cormorants	
Qa·^{u}si·nna	that which is always wet	
Ilimanaŋuaq	the little *Ilimanaq* (v. p. 365)	
No·raŋuaq	the middling small promontory	
Qasiqiāŋuit	the little sea-dogs (phoca vitulina)	the col. Christianshaab (68° 49′ N.)
Akulλe·t	the middle ones	small trading-place (Akugdlit)
Ikamiut	?the ones that dwell over there (*ikamiormiut*, the dwellers of *Ikamiut*)	small trading-place (68° 37′ N. lat.)
Itiλλermiut	the point-dwellers; those who dwell where one carries the boats over	
Nu·k	point of land	Eskimo settlement
Niwa·k	?shoveled or shoved aside (< *niwappoq*)	small trading-place
Nalikak	the angle between the legs as between the legs of a Greenlandic lamp	branches of the fjord south of *Niwa·k*
A·^{u}sia·^{t}t	the spiders	the colony Egedesminde (68° 42′)
Qeqertarssuaq	the big island	Disko Island, especially the name of the colony Godhavn
Qa·rsut	the flat cliff	Godhavn
Ilvileq	land that appears to be an island by itself, but is connected with the mainland or a larger island	Godhavn
Aŋisāt	?	Eskimo settlement on Grönne Eylænder (Green Islands), inhabited only during the summer
Kitt^{u}isuŋŋuit	the little western ones	Grönne Eylænder (Green Islands)

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Place-names.	Translations (Etymology).	Remarks.
Kittissuarsuit	the peculiar western ones	Hunde Eyland (Dog Island), small trading-place
Kittissut	those toward the west	Kronprinsens Eyland (the Crown-prince's Island) small trading-place
Qummarφik	place where one makes water (= *quisarφik* < *qo·q* urine)	Brændevinsskæret (Brandy Reef)
Kiλλermiut	the westernmost inhabitants	Vester Eyland (West Island) Eskimo settlement
Manermiut	moss-dwellers	small trading-place on the west coast
Qeqertarsua'tt'iaq	the middling large island	small trading-place:
Iηηannaq	?	the northernmost inhabitants at the trading-place
Akuλλε·t	the middle ones	
Qaniki(t)	? (the nearest ones?)	the southernmost inhabitants at the trading-place
Koηa·ε'iaq	the point that projects moderately much (in the direction of the sea)	small trading-place (68°18′ N. lat.)
Qipiηasoq	that which is warped, very crooked	Eskimo settlement (1 house) by the *Aulätsiwik* Fjord
Quseq	?	cove or bay near the settlement

The following places are all in the valley of the *Aulätsiwik* Fjord (68° 12′ N. lat.):

Place-names.	Translations (Etymology).	Remarks.
Arqittoq	the nameless one (?)	Eskimo settlement on a little island
Oqa'ttut	the cormorants	island

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Place-names.	Translations (Etymology).	Remarks.
Qeqertaq	the island	the largest island in the group
Ukalilik	the one which has hares	island
Mapparsuit	the big clay-plains	between *Arqittoq* and *Niaqornarsuk*
Niaqornarssuk	the peculiar head (a mountain-knoll resembling a head at the end of a tongue of land)	mountain and Eskimo settlement (68°16′ N. lat.)
Umiarsu·ssaq	the one which resembles an umiak (boat rowed by women)	island
Nättoralik	the one that has an eagle (eagle's nest?)	mountain
Niaqornarsussuaq	the big *Niaqornarsuk* (v. s.).	
Perλerqotaq	? < *perλ·uk*, storm, i. e. the place which attracts the storm	
Nässuit	the horns	
Nät^{s}ernaq	which resembles a floor (just as flat)	
Tuttoqajasoq	the place where one easily may encounter reindeer	
Serφartoq	the black guillemot-catcher	island
Alänηorλeq	the one that is farthest over in the direction of the shady side	island
Alänηorλū·ra	the little *Alänη·orλeq* (v. s.)	island
Qeqertasussuk	the strange or curious island (*-sussuk*, curious?)	large island east of the three small ones
A·^{w}lät^{s}iwik	place where there is disturbance or whirls (in the water)	Eskimo settlement (68°11′ N. lat.)
Iti^{w}λleq	carry-over-place (small tongue of land between two bodies of water where one can carry the boat over	Eskimo summer-settlement
Sarφarsuaq	the strong current	narrowing of the fjord

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Place-names.	Translations (Etymology).	Remarks.
Qorsonittoq	the one that tastes or smells like urine	island (*Tarajornitsoq* on the map)
Tunortoq	? the one that lies behind	larger island
Arφersɪorφik	the whaling-place	the sea south of the islands
Narsa·rsuk	the peculiar plain	the names *Narsa·rsuk* to *Nä^{w}suttoq* belong to the southern side of the fjord
Iti^{w}λersuaq	the big carry-over-place	
Iti^{w}λä·raq	the little carry-over-place	
Iti^{w}λiarsuk	the peculiar carry-over-place	
Qasiηiätta·t	the middling large sea-dogs (phoca vitulina)	
Nʊ·arsorφik	?	
Isersiutit	? haze (< *iseq*)	
Nä^{w}ssuttoq (or *-o·q*)	that which is well hidden	
Orλerφik	place where one aims with the spear or the arrow	cove on the northern side of the fjord (at the inner end)
Iχχawiηissup ilua	the interior of the country with the cooking-place	cove
Sarφa·rsuk	the peculiar current-channel	the sound between *Tunortoq* Island and the mainland
Qarλutoq	the one that uses its lips (*qarloq*), especially with reference to birds: chirp, sing. (here with reference to a waterfall)	the big northern branch of the fjord with Nordenskiöld's Glacier
Omerλʊt	whiskers on a seal's or reindeer's lips (about a kind of heather?)	mountain north of *Tunortoq*

The following are the names of some of the places where the inhabitants of *Niaqornarsuk* draw up their umiaks (boats rowed by women) in the summer after they have rowed up the fjord for many days in order to hunt reindeer. During

that time they live like *illuwiŋaq*-dwellers (*il·uik·äm·iut*), that is to say, in summer-huts or hunting-huts erected on the hunting-grounds and constructed of turf. These huts dispense with the long entrance-passage and have small windows of gut-skin. Sometimes they sleep out of doors merely under a reindeer-skin fastened to a cliff and continue the expedition farther in the next morning. Besides they also carry tents with them which they use at fitting times and places.

Place-names.	Translations (Etymology).	Remarks.
Umi·wik (or *Ummi·wik*)	the boat-place, where the boat is drawn up and kept during the reindeer-hunt	
Arparta·q	the new descent	
Ka·torassät	= *ka·toris·ät*? whale-louse (plur.)	
Sännerut	a cross-bar (over one or more supports), the cross-piece	
Erqalummio	salmon (place-)dwellers	
Ussuit	the ground-seals (phoca barbata)	

The following are the names of some of the places where the *Niarqornarsuk*-dwellers dance in the summer by the hunting-grounds, and where they often meet with other Greenlanders who live farther away. One of them plays the violin, another, the harmonica. The dances, like the melodies, are old-fashioned (Scotch?) reels and peasant-dances which the Greenlanders have learned from the Danish seamen and (in earlier times) from Dutch whale-fishers.

Place-names.	Translations (Etymology).	Remarks.
Qasiŋiättaq	the middling large sea-dogs	
Itⁿλiarsoq	(*-arsoq* = *arsuk*?) the (peculiar?) place where one walks over land when out travelling	

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Place-names.	Translations (Etymology).	Remarks.
Ipiutarsoq	where there is a handle (*ipe*) i. e. a narrow neck between a peninsula and the mainland	
Arqarta·q	the new descent	
Nʊ·a·rsuk	the peculiar point of land	
Sa·rλuättaq	? the rather flat one (or ones)	

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VII. Eskimo Music from North-Greenland.

In ethnographical museums, Eskimo musical instruments are unknown with the exception of the drum. It seems as if the Eskimo have never known nor used any other artificial musical instrument than this. Still they find pleasure in music, namely in the music that is produced by means of that natural human instrument, the vocal chords. Wherever Eskimo have been found in their natural state, they have known the art of singing, but we know nothing about what outside influences may have given rise to their manner of singing.

Before the coming of the Europeans, the Greenlanders' ideas about music were undoubtedly very different from ours. Even if the melodies from North-Greenland given here, which have come down from olden times, contained no evidence of this difference, we should be able to infer it from those specimens of Eskimo music which we have from other branches of this race*). On comparing all these specimens, we find that there must be a certain primitive musical culture among the Eskimo and that this musical tradition is to be traced far back in time; for the music in all of these specimens is highly characteristic and its style is always easy to recognize even in songs heard for the first time. It is not only monotony that characterizes these songs — for that is a feature in all kinds of primitive music — but rather certain stereotyped or traditional relations between the few tones constituting the Eskimo

*) F. Boas: The Central Eskimo (Sixth annual report of the Bureau of Ethnology (Smithsonian Institution) 1884—85. Washington 1888). — R. Stein: Eskimo Music (The White World. New York 1902 and Globus Vol. LXXXIII).

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scale, together with certain traditional rhythms. The latter perhaps owe their peculiarity to the fact that the songs for the most part are sung for the first time to the accompaniment of the drumstick's steady beat. — The melodies themselves, however, do not seem to be very stable; at least I have not succeeded in finding one and the same melody preserved both in and outside of Greenland, for instance in Boas's collection from Baffins Land or in Stein's from Smith Sound. But the material furnished by these collections is to be sure rather deficient when it comes to making such a comparison. There is no doubt, however, that the style of the songs is everywhere the same.

I found that the Greenlanders are as a rule musical. They are quick at catching tunes and can repeat what they have heard with exactness. I conclude this from the ease with which they pick up European melodies. It is worth noticing that when these melodies are adopted by the Greenlanders, it is only very gradually that they seem to become modified by the more naïve national style, with which they in reality never wholly assimilate. The new melodies (songs or dances from Europe) are preferred as being prettier than their own, which are therefore in most places in danger of being forgotten. It was not until I came north of the *Nɔssuaq* (Nugsuak) Peninsula that I found them in any great numbers. It is always easy to distinguish the genuine Eskimo melody from the imported one. — Of the following melodies, no. 2 to 5, also no. 8 and no. 12 were communicated to me by a native *ajoqe* ("kateket") or school-teacher (Martin M., *Illorsuit*). It is obvious that they are originally genuine Eskimo melodies, but have partly become somewhat modernized, both with respect to rhythm and melody, because the man who communicated them to me was more familiar with European music than is the case with ordinary Eskimo hunters (cf. the end of no. 3). No. 100 and the lullaby at the end of the collection have more of a European stamp and are probably of foreign

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origin like so many other melodies that have become popular in West Greenland. Especially pretty and genuine in sound is no. 99 (written down in Rodebay near Jakobshavn).

I have always taken down and reproduced the songs in the key intonated by the individuals themselves. As for the female voices I have always put them an octave lower. As a rule the Greenlanders sing in tune, but now and then I had to take down the melodies after individuals who were less certain in their intonation, and on those occasions it often occurred to me that the intervals of our staff might be too great or that the fixed values of our notes might not be adapted for all the Eskimo's tones. But aside from such occasional circumstances, I did not get the impression that our staff was unsatisfactory for the notation of this kind of music or that the Greenlander makes use of more minute or different intervals than those we have in our music.

As a rule I do not introduce the songs with any indications of key and measure because both of these often shift within the same song, and particularly because neither of them corresponds to what is generally understood by those terms in civilized music. It often seemed rather arbitrary to me to mark off bars, yet in most cases I have done it to the best of my ability. The qualitative value of the tones, that is their pitch, I found easier to determine than their quantitative and rhymthmical values. But I acknowledge my lack of practise in taking down records of this kind and I leave to those who are more competent to criticize and utilize this material.

The tempo in the songs I estimate to shift between andante and allegretto*).

The mark on the music-line indicates that the preceding measure is to be repeated unchanged.

*) When the Greenlanders sing their hymns to ours melodies, they have a tendency to draw the tones out very long and to make our andante into a Greenlandic adagio.

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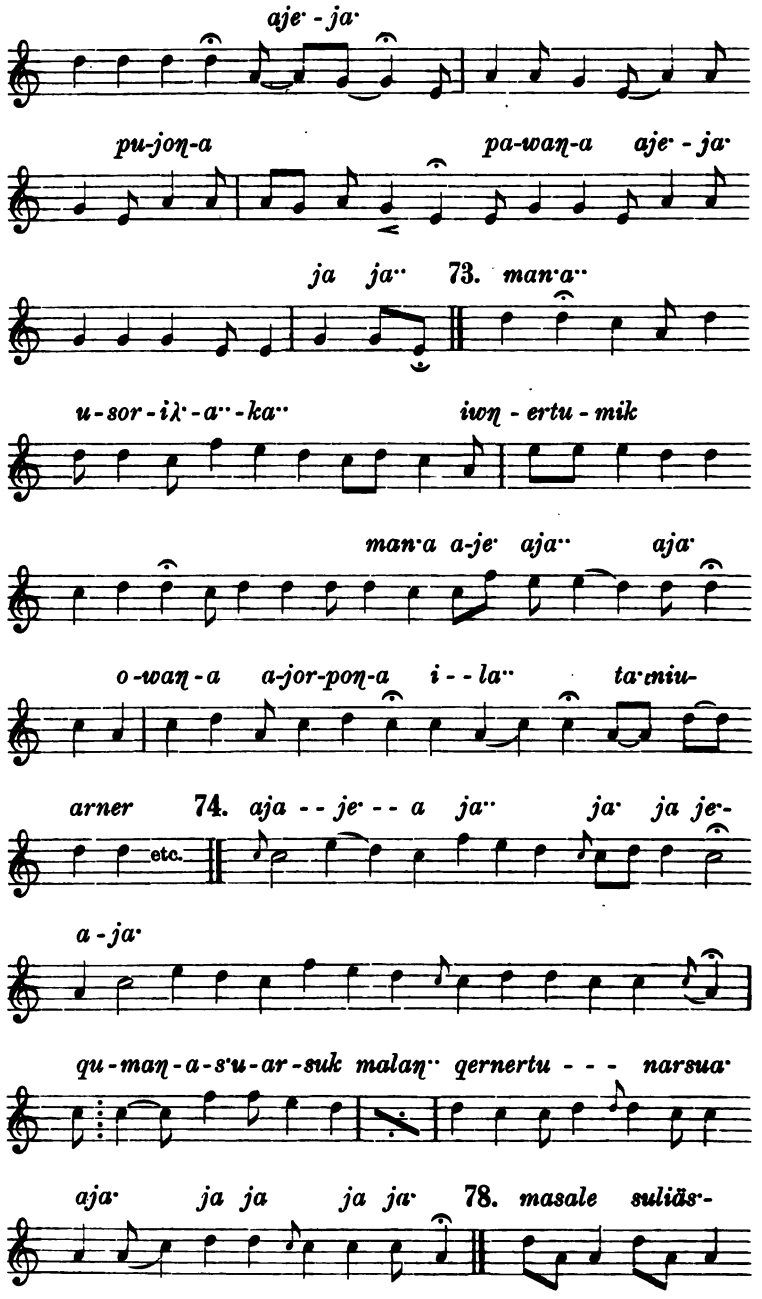
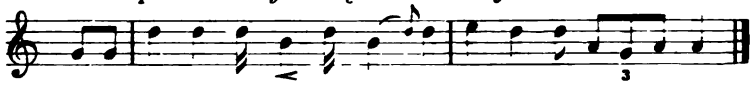
naŋa nu-i-sa-raŋame
6. i-a·· o-ka-liŋuaq
i-sik qiwsaru-
tiλ·ak ersiŋa·k·a
8 (13). ku-säs-uaq iniminit
aniλerqa·q wiju-teou haja-ha· aja-ja·
9. a·-jiŋa a·-jiŋ-a· ka-taŋ-a·-ja
12. (Melody without words).
17. qama· aja·i-je·-a·
je·-a qa-ma· ja·- je·-a- ja·-

a - wa·i - ja·
a - wa·i - a·· aja· 21. usut·ia
tikiŋ - a·ŋa - t·t tikiŋ - a·ŋa -
t·t aja ja - ha - a· qoŋasiaŋut
-λ·a·ra·oŋɔ·q a - ja - ja ha-a·· 25. a - ja· - ja -
26. a - ma· - ja
ama· - aja - aja·
ersiŋ - ina - qaŋi - latit
a - ma· - ja·ja· 30. ja·-ja·
ut· - o· - tori - artorpoŋa a - kut· - usut

etc.
36. i-mi-ka-ju-to-kaw-sa·-t u-iŋ-er
sä-λer-su-ak·-a aja· aja·
a·-ja· 38. a-ma aja·
i-tiŋ-ua-ra ta-kor-qil-a-ra
a-ja ja 45. amar-
qa-ja· ta-kor-nar-pi-uk a-ta·-tar-piŋ-u-na
pisi-a· amar-qa-ja ama-qa ja ja ja ja
49.

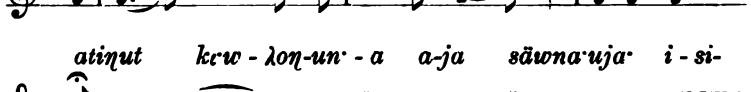

aje·-ja·
pu-joŋ-a
pa-waŋ-a aje·-ja·
ja ja·· 73. man·a··
u-sor-iλ·-a··-ka··
iwŋ-ertu-mik
man·a a-je· aja·· aja·
o-waŋ-a a-jor-poŋ-a i--la·· ta·ɲiu-
arner 74. aja--je··--a ja·· ja· ja je-
etc.
a-ja·
qu-maŋ-a-s·u-ar-suk malaŋ·· qernertu--- narsua·
aja· ja ja ja ja· 78. masale suliäs-

81a. *ima-qa·ᵗna ku-jäλ·-aŋ-a·ᵗ-ne a·-ja*

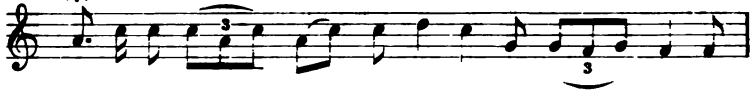


81b. *qutv·- kɛwloŋun·a qalasarsu-*

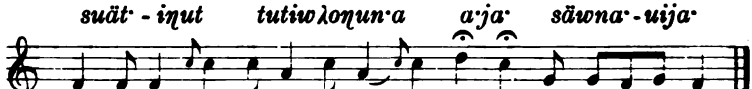
atiŋut kɛw-loŋ-un·-a a-ja säwna·uja· i-si-



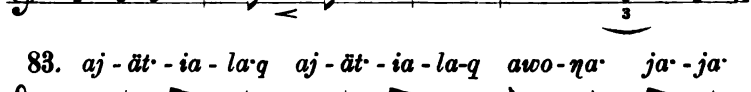
suät·-iŋut tutiwloŋun·a a·ja· säwna·-uija·



83. *aj-ät·-ia-la·q aj-ät·-ia-la-q awo-ŋa· ja·-ja·*



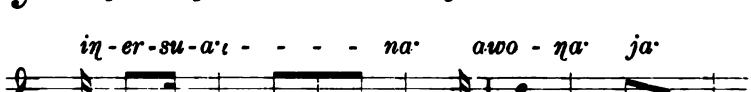
iŋ-er-su-a·ι-na·



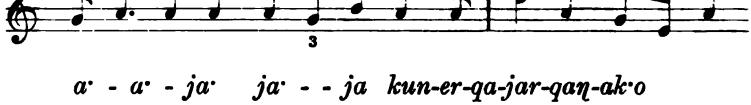
iŋ-er-su-a·ι- - - - na· awo-ŋa· ja·

a· -a· -ja· ja· - -ja kun-er-qa-jar-qaŋ-ak·o

-ak·o· awoŋ-a· ja·-ja ja a-ja-ja



ja- ajät·iaŋ ajät·iaŋ 86. *awa·-a·*



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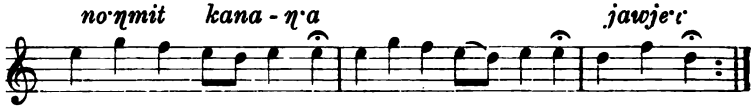
Children's Games no. 10.

Lullaby (sung alike in *Niaqornarsuk* and in *Iλ·orsuit*).

Variant of melody no. 4 (from Jakobshavn).



Drum-song from the east coast (*Ammassalik*) *):

*) Written down after the phonograph brought home by C. Kruuse (1902).

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ADDITIONS AND CORRECTIONS.

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meaning of *nipi* in this language is water. Ganong (v. s. p. 256) tries to explain *Nepisiguit* by the aid of the Micmac language where we have the word *Win-peg-ij-a-nik*, rough water, but this seems less plausible. A. F. Chamberlain (in The Eskimo Race and Language. Proceed. Canad. Inst. Toronto 3. Series, Vol. VI, 1887—88, p. 276) claims that this stem, which is found in many Algonkin languages (*nipi*, water; *nipa*, die; sleep; night; moon), is a loanword in the West and Central Eskimo languages (M. *nipaluk*, rain; L. *niptaipok*, cf. Gr. *niwtaip·oq*, it snows; etc.); but he has no doubt confused different stems.

The Greenlandic word *nipisa*, a wolf-fish, which also occurs in Labrador with the same meaning, is naturally to be connected with the stem in the verb *nipippoq*, hangs fast, sticks fast (like porridge in a pot) etc.

The ending *-quit* is a common diminutive suffix in Greenlandic (in the plural) but it must be remembered that according to the principles of the present language it would be irregular for the final *a* of the stem-word (*nipisa*) to be changed to *i* before this suffix.

Tadoussak (p. 21). In Greenlandic *tarto* (L. *takto*), a kidney; suffix *-ussaq*, resembling it. Cf. *Tartu·ssaq* (place-name) p. 337.

ad p. 32.

In a recently published work by A. A. Björnbo and Carl S. Petersen: Fyenboen Claudius Clausson Swart (Claudius Clavus), Nordens ældste Kartograf. En Monografi. Avec un résumé en français (Det Kgl. Danske Videnskab. Selsk. Skrifter, 6. Række, historisk og filosofisk Afd. VI, 2. København 1904), there is given an undoubtedly correct and final explanation of the place-names in Greenland found on the old maps. It appears that not only are they all Danish words which probably Claudius Clavus himself has attached arbitrarily to rivers and promontories along both coasts of the land, but also that when they are read connectedly in the order in which they stand on the map, from north to south along the east coast and from south to north

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along the west coast, they compose a strophe of an old Danish popular ballad. — After this discovery, I must accordingly make some change in my remarks about these place-names. The word *Nice-fluvius* on the maps has probably no connection with ON. hnísa.

ad p. 43.

Even if Cranz's information does not refer to East Greenlanders living as far north as the inhabitants of Angmagsalik (which I now consider rather improbable), still it shows that at that time too there was a striking difference between the dialect of the northern East Greenlanders and that of the southern West Greenlanders, whereas the dialectal differences between the same East Greenlanders and the northern West Greenlanders was not so great.

The Eskimo at Cape York seem to have been mentioned for the first time by Poul Egede in his Journal p. 239 (for the year 1771), where he says: A colony has been founded this year at a point 73° N. Lat. on the island Upernavik, the native name, which signifies spring-place, having been retained. The next year an ordained parson and a native "kateket" are sent up there. The land here is found to be lower than it is farther south and consists almost wholly of islands; it extends in a north-easterly direction and afterwards, as the Greenlanders say, in a more easterly direction as soon as one has passed to the north of the so-called Isblink (glacier). There are also said to be inhabitants farther north at 75 degrees, and might it not be worth the trouble to try to get there, since the passage is not so endangered by ice as the passage to Österbygd etc.

ad pp. 49—60. Bibliographical Survey.

It is not my intention to make this complete, but merely to call attention to some additional works which contain specimens of the Eskimo language and might therefore be of use to the comparative philologist.

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a) Original lists of words from the language of the West Eskimo taken down on expeditions to Alaska and Tschuktsch Peninsula are to be found in various works by Russian authors which are mentioned in Pilling's Bibliography, for instance in the works about the expedition of J. Billing (1785—94) vid. in Pilling Sauer; Lisiansky (1803—06); G. A. Sarichеff vid. Robeck; Davidoff (1810—12); F. v. Wrangel (1821—23), vid. K. v. Baer; L. A. Zagoskin (1842—44); Zelenie; Furuhelm etc.

I may also mention here James Cook (cf. the survey p. 51, no. 8); W. H. Hooper; F. Whymper; A. Pinart; W. H. Dall cf. the survey p. 56, no. 49); Aurel Krause, for the titles of whose work the reader is referred to Pilling.

Copious specimens and lists of words from the East Eskimo in Baffin Land, besides those found in the works of Fr. Boas already mentioned (cf. the survey no. 16 and 24), are also to be found in the following articles by the same author: Eskimo Tales and Songs (Journal of Amer. Folk-Lore Vol. II, 1889, Vol. VII, 1894 and Vol. X, 1897) and Der Eskimo-Dialekt des Cumberland-Sundes (Mittheilungen der anthropologischen Gesellschaft in Wien. Vol. XXIV, Wien 1894).

Linguistic notes about the Eskimo around Smith Sound, besides those in the works mentioned in the survey (cf. the survey no. 25 and 26), are also to be found in Cl. Markham: 1) The Arctic Highlanders (Ethnol. Soc. of London, Trans. Vol. 4, London 1866), 2) Language of the Eskimo of Greenland (Royal Geogr. Soc. of London, Arctic Geography and Ethnology, London 1875) and in A. L. Kroeber (cf. the survey no. 23): 1) Animal Tales of the Eskimo (Journ. Amer. Folklore Vol. XII, 1899), 2) Tales of the Smith Sound Eskimo (ibid.).

d) It is only the second edition of Barton's book (cf. the survey no. 60) that contains Eskimo words (from Cranz). In the first edition there is only one word (p. 67 *nuna*).

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Between nos. 63 and 64 of the survey is to be inserted C. R. Lepsius: Standard Alphabet for reducing unwritten languages and foreign graphic systems to a uniform orthography in European letters (2. ed., London and Berlin 1863), in which Greenlandic is treated (pp. 289—291) and where there is a review of Kleinschmidt's orthography.

ad p. 65.

A series of articles from the magazine *Atuagagdliutit* have been translated into English by H. Rink and are included in his "Danish Greenland, its People and its Products". London 1877, pp. 230—267.

ad p. 71 (Phonetics § 2).

While there is no doubt that *k t p* occur sometimes with and sometimes without strong aspiration in Greenlandic, yet it may be difficult to determine in which words or cases these sounds are aspirated. In remarking that the aspiration is found before the vowels *i e u*, I do not mean that we always find it or that we find it in all words before these vowels. I have — perhaps too hastily — formulated a general rule or "law" on the basis of occasional cases. It is perhaps necessary to systematize the cases in some other way — if they can be systematized at all.

ad pp. 86—87.

[χ] This sound has some resemblance to the German ich-sound and differs from the ach-sound in that it lacks the uvular friction. Its place of articulation is therefore probably farther forward in the mouth than I had determined, though not as far forward as is the case with the German ich-sound. I estimate its field of variation to lie between γ^{j} and $\gamma^{h(hg)}$.

There is a similar difference in articulation between the [g]-sound and the fricative in German "Tage".

The Gr. [ρ]-sound on the other hand has the uvular friction in a high degree and might be described as an exaggerated German ach-sound (γ^{kl}).

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ad pp. 190—191 etc.

By *t·ç* I designate a single uncombined palatal sound partly articulated with the blade of the tongue, the point of the tongue remaining passive. In the beginning in my notes on East Greenlandic I sometimes used *tjs* to designate the same sound.

pp. 188—189 etc.

$\underset{\circ}{r}$ designates a voiceless *r*, that is, about the same as *ρ* but without the strong aspiration that characterizes the latter sound.

ad p. 186 and 196—197 (§ 31).

After this section had been printed I was informed that at about the same time the printers had on hand an article by Pastor Schultz-Lorentzen: "Eskimoernes Indvandring i Grönland" (The Immigration of the Eskimo into Greenland), an article intended for publication in "Meddelelser om Grönland" Vol. XXVI. In this work we have for the first time a closer investigation of a dialect-division on the southern part of the west coast, namely at Godthaab. All along the coast south of this colony we find the unrounded vowels *i* and *e* — just as in East Greenlandic — in all those words which in the territory north of this colony have *u* and *o*. Cf. my dialect survey pp. 196—197.

ad pp. 228—229 (§ 32).

It was not until after I had written this that I came across F. Boas's Notes on the Eskimo of Port Clarence in Journ. Amer. Folk-Lore, Vol. VII (1894). Port Clarence is situated in Alaska at the narrows of Bering Strait, accordingly somewhat farther north than those Eskimo whose language Barnum has described. In the language-specimens given by Boas here, the uvular tenuis occurs just about as frequently as in Boas's specimens of the East Eskimo language. Here I find written *umiaq*, *qayaq*, *qipik* (blanket), *kapitaq* (watertight), *nirijoq* (eating), *a'qētik* (mittens), *nanuq* (polar bear), *arnaq* (woman), etc. We have therefore every reason to believe that as far as this sound is

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concerned there has been no deviation from the East Eskimo consonant-system before reaching this point (accordingly also at Pt. Barrow) and then it is also less probable that the dialect described by Barnum lacks this sound in so high a degree as his manner of designating the sounds would lead us to suppose.

The map.

1) The Eskimo living farthest south on the west coast of America are — according to W. H. Dall (Tribes of the Extreme Northwest) — *Ugālakmut* (*-miut*?), who also inhabit the island *Kayak*. On this side of America too they must have lived farther south in earlier times, as far down as Stikine River or even still farther south, as is evident from the kitchen-middens that have been found there (between 56—57° N. lat.).

2) Dall's and Nelson's maps have the ending *-mut* in the names of the tribes, while the suffix with this signification otherwise generally has the form *-miut*. That the latter form is present in the Alaska language too is confirmed both by Ray and by Barnum (Gr. § 102). Is it not possible that the other spelling is to be explained by the fact that the maps have been compiled after Russian maps where the letter ю is used for iu?

3) News has just been received from "The Danish Literary Greenland Expedition" that they have traversed the district around Melville Bay and that everywhere along the coast they have found old ruins of Eskimo houses, which testifies to the correctness of my hypothesis as to the West Greenlanders' emigration to South Greenland from the north.

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Table of comparison

between

the symbols in Kleinschmidt's orthography and my own.

Kleinschmidt's orthography		Symbols used in this work
a	=	*a ȧ ä* a ȧ ä
â	=	*a·* a·
agt	=	*ȧᵗt· ȧt·*
agdl	=	*ȧλ·*
agss	=	*ȧᵗς· ȧς·*
ai	=	*a·ι a·ⁱ a·ᵗ a·ᵉ*
au	=	*a·ʷ a·ᵘ a·ᵒ*
dl	=	*λ*
e	=	*e ə ɛ* e ė ë
f	=	*φ*
g	=	*g*
gdl	=	*λ·*
gf	=	*φ·*
gg	=	*χ·*
gk	=	*k·*
gs	=	*ς·*
gt	=	*t·*
h	=	*h*
i	=	*i ι*
î	=	*ι·*
igt	=	*it· ït·*
igdl	=	*iλ· ït·*
j	=	*j*
k	=	*k*
ĸ	=	*q*

Kleinschmidt's orthography		Symbols used in this work
l	=	*l*
m	=	*m*
n	=	*n*
ng	=	*ŋ*
ngn	=	*ˉn· ˡ-n·*
ngm	=	*ˉm· ˡ-m·*
o	=	*o* o ɔ ɔ̇ ɔ̈
p	=	*p*
r	=	*r* ɾ
rng	=	*rŋ rŋ*
rr	=	*ρ·*
s	=	*s*
ss	=	*s· ς·*
t	=	*t*
tdl	=	*λ·*
ts	=	*tˢ ts*
u	=	*u ü υ υ̇ ῡ*
û	=	*υ· υ̇·*
v	=	*w*
vf	=	*φ· ʷφ*
'-p '-t '-k	=	*ˡ-p· ˡ-t· ˡ-k·*
'-n '-m	=	*ˡ-n· ˡ-m·*
The sign -	=	vowel

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Signs and abbreviations.

* before a word indicates that the word is a reconstructed (hypothetical) form.

< the word (the syllable or the sound) to the left of the sign has originated from that to the right or is genetically secondary when compared with it;

> vice versa.

— the words on both sides of the sign are genetically connected or doublets.

· (quantity), ˈ (stress), ˋ (pitch), ʼ (stop), ˜ (nasalization), vid. Tab. I.

Analphabetical signs according to O. Jespersen's system. vid. Tab. II.

Gr. = Greenlandic.

Kl. Ordb., Kl. Dict. = S. Kleinschmidt's Grönlandske Ordbog, vid. Bibliographical Survey no. 34, p. 54.

*Kl. = the word cited is not in Kleinschmidt's Ordb.

Kl. Gr. = S. Kleinschmidt's Grammatik der grönländischen sprache, vid. Bibliographical Survey no. 47, p. 56.

Rasm. Ordb. = J. Kjer and Chr. Rasmussen: Dansk-grönlandsk Ordbog, with a Greenlandic-Danish supplement, vid. Bibliographical Survey no. 38, p. 54.

Abbreviations of Place-Names, vid. p. 6.

▪ ▪ Dialect Districts p. 182.

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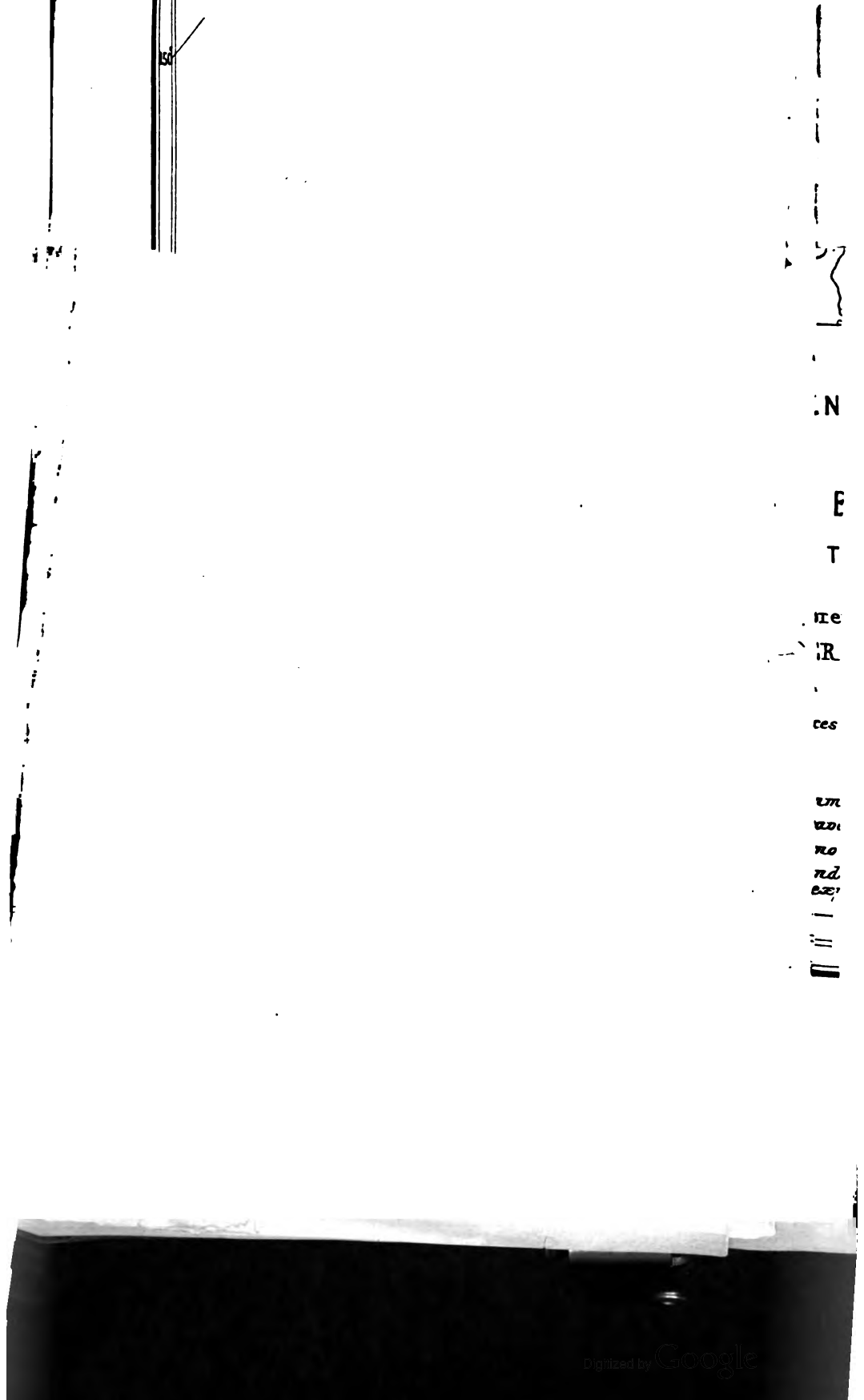

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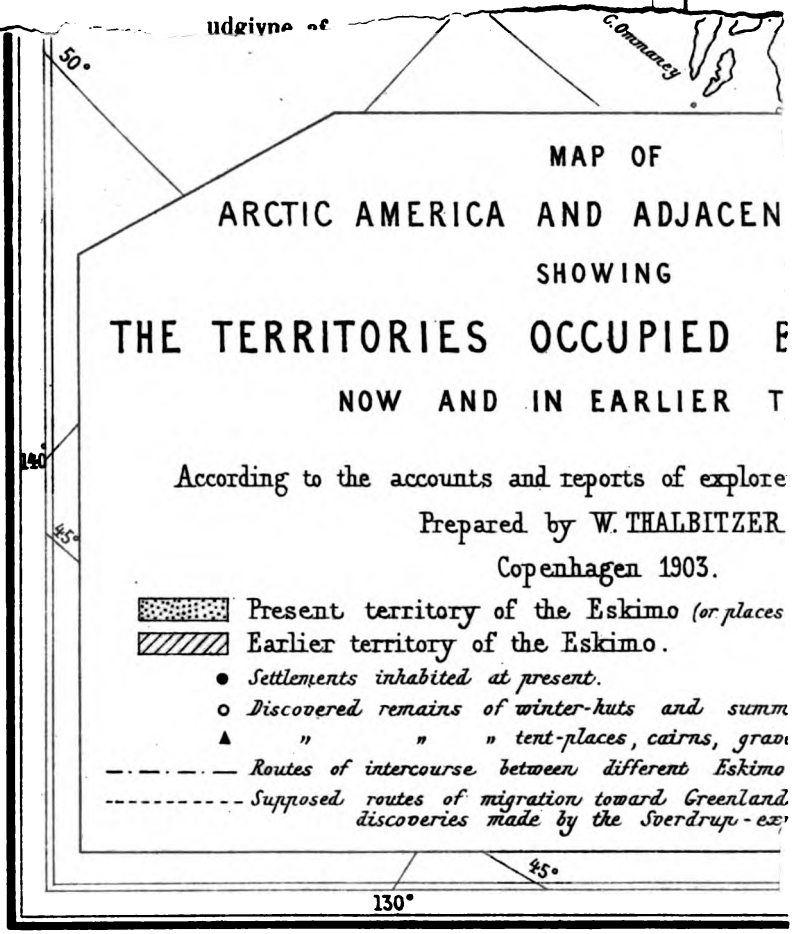

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af Dr. **H. Rink.**

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